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PROCESS AND PROBLEMS IN DEVELOPING A SCALE OF ATTITUDES TOWARD
TEACHING AND LEARNING

by

Fiona S. Crofton

B.G.S., Simon Fraser University, 1980

THESIS SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF ARTS (EDUCATION)
in the Faculty
of
Education



Fiona S. Crofton 1984

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PROCESS AND PROBLEMS IN DEVELOPING A SCALE OF ATTITUDES TOWARD

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ABSTRACT

While attitude is probably the most ubiquitous of all terms in the social sciences, inquiry into human attitudes presents formidable problems in the field of social psychology. While such inquiry is seen as a way to inform much of our social science research, the determination and measurement of attitudes continues to be a perplexing obstacle to research investigation.

This study was an attempt to devise an instrument which would be useful in identifying attitudes. The study focused on pre-service teachers. It was assumed that if attitudinal indicators could be determined, there would be much of value to be learned about potential teacher selection and teacher performance.

The first step in the development of the instrument was to design a scale to reveal the beliefs/attitudes of the sample respondents. A pool of statements was obtained from a review of current attitude measures reported in the literature and from an open-ended questionnaire distributed to various individuals in the Education faculty. From this pool, a number of statements were selected and given to 68 pre-service teachers enrolled in the Professional Development Program at Simon Fraser University who volunteered to act as judges in sorting.

When the sortings were completed it was found that there was virtually no agreement about the degree to which a particular statement of belief was seen to be favorable or unfavorable. Without that agreement it became impossible to

develop an instrument. While the primary goal of the study could not be realized, some results were nevertheless obtained which point to directions for further research:

a) there is virtually no agreement among pre-service teacher trainees about the positive or negative nature of specific belief statements about teaching and learning;

b) individuals selecting teaching programs with different philosophical orientations appear to differ in the way they perceive statements;

c) an individual's choice of program may be a reflection of attitude;

d) one cannot assume that a given statement of belief will be understood/interpreted in the same way by more than one person.

Implications were drawn regarding a) the nature and use of attitude scales now available, b) the methods used in their construction, and c) the role attitude may play in program selection and teaching training.

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TABLE OF CONTENTS

Approval	ii
ABSTRACT	iii
Acknowledgements	v
List of Tables	x
List of Graphs	xii
CHAPTER I INTRODUCTION	1
The Need for the Study	1
Statement of Intent	3
Purpose of the Study	3
Assumptions	4
Definition of Terms	5
The Professional Development Program (PDP)	5
Modules	6
Attitude	7
CHAPTER II REVIEW OF RELATED LITERATURE	8
Attitudes and Behavior: A Historical Perspective	8
Dimensions of Attitudes	15
Summary	19
Principles of Measurement	20
Validity	24
Reliability	25
Summary	26
Attitude Measurement Techniques	27
Direct Measures	28
Apriori Scales	29

Psychophysical Scales	30
Summative Scales	31
Master Scales	32
Cumulative Scaling	33
Semantic Differential	35
Indirect Methods	36
Summary	38
Applications in Education	39
Pupil Inter-relations	41
Teacher and Student Relations	42
Teacher and Administrator Relations	43
Guidance and Counselling	44
Student Personal Adjustment	44
Attitudes Toward the Educational Process	45
Summary	46
Chapter Summary	47
CHAPTER III DATA COLLECTION	48
The Investigation period	49
Phase I: The Collection of Belief Statements	50
Phase II	52
Phase III	56
Exclusions from the Study	57
Summary	59
CHAPTER IV DATA ANALYSIS AND DISCUSSION OF FINDINGS	60
Phase I	61
Previously Reported Attitude Measurements	61
The Open-ended Questionnaire	63

Number of Responses	63
Types of Responses	65
Summary of Findings from Phase I	71
Phase II	73
Analysis of the Data from the Native Teacher Education Program	73
Observations from Three Modules of the Professional Development Program Sample	74
Summary of Findings from Phase II	78
Phase III	80
Analysis and Findings of the Whole Sample	80
Frequency Distributions	81
Rounded Scale Values	88
Q Values	91
Variation in Ambiguity	92
Unfavorable, Favorable and Neutral Statements of Attitude	94
Summary of Findings Generated by Analyses of the Whole Sample	99
Analysis and Findings Based on a Comparison of Modules	100
A Comparison of Point Selection Percentages	101
Comparison of Frequency Distributions	105
A Comparison Between Groups of Rating Tendency by Zone	105
Comparison of Rating Range	110
Comparison of the Distribution of Means	111
Group Comparison of t-tests	112
Group Comparison of Statements Representative of Unfavorable, Favorable and Neutral Attitudes	116

Chapter Summary	120
CHAPTER V SUMMARY, CONCLUSIONS, IMPLICATIONS, AND IMPLICATIONS FOR FURTHER STUDY	121
Summary	121
Conclusions	122
Implications	123
Implications for Further Study	125
Bibliography	126
Appendices	131
Appendix A: Open-Ended Questionnaire	132
Appendix B: List of Statement Sources	136
Appendix C: Samples of Questionnaire Responses	137
Appendix D: Phase II Instructions to Participants	150
Appendix E: Phase III List of Statements	153
Appendix F: Phase III Instructions to Participants	159
Appendix G: Native Teacher Education Data	162
Appendix H: Phase III Table of Values: Unadjusted Sample	165
Appendix I: Phase III Table of Values: Adjusted Sample ..	169
Appendix J: Phase III Graphs of Cumulative Frequencies for the Unadjusted Sample	173
Appendix K: Phase III Graphs of Cumulative Frequencies for the Adjusted Sample	200
Appendix L: Phase III Graphs of Cumulative Frequencies Module Comparison	227

LIST OF TABLES

TABLE		PAGE
3.1	Phase II Sample Detail	54
3.2	Phase III Sample Detail	58
4.1	Detail of Open-ended Questionnaire - Number of Returns	64
4.2	Statements Placed in each of 3 Zones of the Continuum by each Sample Group: Analysis 1	76
4.3	Statements Placed in each of 3 Zones of the Continuum by each Sample Group: Analysis 2	77
4.4	Comparison of Unadjusted and Adjusted Samples in use of Point Ratings	82
4.5	Summary of Statements Scaled in each of 3 Equal Zones of the Continuum Based on Scale Values	89
4.6	Number of Statements With Selected Q Values	91
4.7	Most Unfavorable Statements of Attitude	95
4.8	Most Favorable Statements of Attitude	97
4.9	Most Neutral Statements of Attitude	98
4.10	Module Group Comparison of Point Selection Percentages	102
4.11	A Comparison Between Groups' Rating Tendency by Zone: Analysis 1	106
4.12	A Comparison Between Groups' Rating Tendency by Zone: Analysis 2	106
4.13	A Comparison Between Groups' Rating Tendency by Zone: Analysis 3	107
4.14	A List of Statements for which there was No Significant Difference Between the Means of the Open Education and Early Childhood Groups	115

4.15	A Comparison of Open Education and Early Childhood Groups in the Selection of Most Unfavorable Statements of Attitude	117
4.16	A Comparison of Open Education and Early Childhood Groups in the Selection of Most Favorable Statements of Attitude	117
4.17	A Comparison of Open Education and Early Childhood Groups in the Selection of Most Neutral Statements of Attitude	117

LIST OF GRAPHS

GRAPH	PAGE
4.1	Comparison of Unadjusted and Adjusted Samples in use of Point Ratings 83
4.2	Cumulative Frequency Graph:Statement No.8 86
4.3	Cumulative Frequency Graph:Statement No.11 86
4.4	Cumulative Frequency Graph:Statement No.52 86
4.5	Cumulative Frequency Graph:Statement No.65 86
4.6	A Comparison of Unadjusted and Adjusted Samples in the Distribution of Statements Based on Rounded Scale Values 90
4.7	Average Q Value Changes Over the Continuum: The Unadjusted Sample 93
4.8	Average Q Value Changes Over the Continuum The Adjusted Sample 93
4.9	Module Group Comparison of the Distribution of Ratings:The Unadjusted Sample 103
4.10	Module Group Comparison of the Distribution of Ratings:The Adjusted Sample 104
4.11	A Comparison of Open Education and Early Childhood Modules in the Distribution of Statements Based on Rounded Means: The Unadjusted Sample ... 113
4.12	A Comparison of Open Education and Early Childhood Modules in the Distribution of Statements Based on Rounded Means: The Adjusted Sample 114

CHAPTER I
INTRODUCTION

The Need for the Study

Attitude has been seen as similar to constructs of belief, value and opinion and, as might be expected of so abstract and serviceable a term, it has come to signify many things to many writers: ". . . a state of readiness, a tendency to act or react in a certain manner when confronted with certain stimuli." (Oppenheim, 1966:5), ". . . the sum total of man's inclinations and feelings, prejudice or bias, preconceived notions, ideas, fears, threats and convictions about any specific topic. . . ." (Thurstone, 1964:6), ". . . ways of looking at things and persons, forms of readiness, approaching and withdrawing behavior, feelings of rightness and wrongness and liking or disliking for objects or values differ from emotions though they are related to them. They have been fused in the working concept of attitude . . . the individual's own evaluation of his conduct and desires. . . ." (Remmers, 1972:3-4), ". . . the affective or feeling core. . . and the cognitive, or belief elements which describe the object." (Katz, 1967:460)

While the meaning of attitude is subject to many definitions, it would seem that, whatever one's point of view, attitudes have to do with perceptions, evaluations and meaning projected onto the world which guide an individual's actions. This relationship between how an individual perceives him/herself, others, his/her environment, and how s/he behaves, is the subject of increasing attention on the part of many writers and researchers (Combs, Ellerbroek, Ellis, Fishbein, Kelly, Rath and Wassermann, to name a few.) The importance of this relationship to teaching is reflected in the writing of Arthur Combs (1978:1). He states:

"Good teaching is not, it seems, a question of right methods or behaviors, but a problem-solving matter, having to do with the teacher's unique use of self . . . Effective and ineffective teachers could be clearly discriminated on the basis of their perceptual organizations or belief systems."

Wassermann supports this idea when she discusses how our beliefs can be limiting or enabling; how they operate to make a successful or unsuccessful leader. She further suggests that if one wants to promote effectiveness in teaching, one must work with students' beliefs . . .

"In our work with pre-service teachers . . . we have learned that fundamental beliefs about teaching, about learning, about children, are the most powerful sources of what the teacher actually does in the classroom. In other words, if you want to 'change' teacher behavior, one important and vastly neglected way to do it is to work with the belief systems of the student." (1982:8)

An instrument which attempts to measure an individual's attitude would be very useful in further explorations of the effects of beliefs/attitudes on teacher effectiveness and the

role they may play in teacher training programs. The theoretical importance of attitudes/beliefs/perceptions about teaching and learning, the effect of personal beliefs on teacher effectiveness, the apparent lack of focus on beliefs/attitudes in educational programs, and the possibility of promoting teacher effectiveness using belief positions as a source, provide the rationale for this study.

Statement of Intent

This study undertook an exploration of the problem of developing a scale of attitudes toward teaching and learning on a "positive"- "negative" continuum.

Purpose of the Study

Numerous attempts have been made to 'measure' attitudes. The methods and purposes are as varied as the definitions themselves.¹ Thurstone suggests one way wherein individuals determine the meaning given to a particular construct or constructs through their ratings of belief positions. These ratings are then used to build a scale to 'measure' the attitudes of similar populations. He writes

¹See Chapter 2-"Attitude Measurement Techniques" and "Applications in Education" for examples of various methods and purposes.

"... in these studies we are concerned merely with the description of the degree of affect for or against various social symbols by psychophysical methods. In giving each person a positive or negative score on a disputed social issue, we do not say anything whatever as to whether his attitude is good or bad, whether his attitude should be censured or encouraged. That is a matter of interpretation in each issue." (1967:24)

The purpose of this study was to explore the possibility of developing a scale of attitudes toward teaching and learning using ratings from a population similar to the one for which the scale would be designed. The development of the scale would serve to:

- a. determine the nature of beliefs held about teaching and learning,
- b. determine whether there was agreement about the "positive" or "negative" nature of particular belief statements, and to
- c. explore similarities and differences (if any) among subjects in the sample.

While the attempt was made to measure a subject's attitude, it was not the intent of this study to suggest that attitudes can be wholly described by any single numerical index.

Assumptions

This study assumed that attitudes can be measured. The scales and other procedures purporting to measure attitudes as well as texts describing various methods of attitude measurement, provide validating evidence in support of this

assumption.

A second assumption underlying this study was that there is validity in Thurstone's method of scale development. (Shaw and Wright, 1967)

A third assumption was that it is possible to identify major areas of perceptions toward teaching and learning. (Combs, 1978)

A fourth assumption was that subjects can be reasonably expected to tell the truth about their opinions.

A fifth and last assumption was that a scale administered to the appropriate population would provide information about group differences in attitudes. (Oppenheim 1966; Summers, 1970)

Definition of Terms

For the purpose of clarification and in order to increase reader understanding, the following terms are defined:

The Professional Development Program (PDP)

is a teacher-training program three semesters in duration. Studies and activities are arranged in the following sequence:

First Semester

EDUC #01 Introduction to Classroom Teaching. A half semester of classroom observation and experience during which groups of two or three students work as a team with a teacher. Students observe, teach and participate in school routines and programs.

EDUC 402 Studies in Educational Theory and Practice. A half semester of study on campus during which students extend their knowledge of educational theory and practise. The students attend workshops and seminars which reflect their interest in grade levels and specific training areas.

Second and Third Semesters

EDUC 405 Teaching Semester. (Prerequisites: EDUC 401, 402)

A semester of classroom experience supervised by a classroom teacher and a university associate.

EDUC 404 Semester on Campus. (Prerequisites: EDUC 401, 402)

A semester of course work to ensure that the student's professional, academic and certification requirements are satisfied.

Modules

are sub-programs of PDP which students may select according to their area of emphasis. These modules are available to students beginning their first semester in the Spring. The Open Education module is a 3 semester program; other modules operate for the first semester only. Module options are outlined below:

Early Childhood Module

This module focuses on how young children grow, develop and learn, their needs, the kinds of environments that facilitate their learning and the role of the teacher in working with children.

Open Education Alternative Module

The Open Education Alternative Module is a limited admission program and students must make an application for consideration and participate in an interview before admission into the program. Admissions are limited to approximately 15 students. The program focuses on interpersonal skills, diagnosis based on the needs theory, and on curriculum development.

Multicultural Module

This module focuses on "the many ways in which culture . . . influences a child's growth,

development and interactions with other children" and the ways that culture "can be used as a resource in enhancing education for all children." (Program outline 1983) Students selecting the multicultural emphasis are placed in classrooms with children from a variety of cultural backgrounds.

Secondary Module

The Secondary module is designed for students wishing to emphasize teaching at the secondary level (grades 8-12). The focus of this module is on the acquisition of a set of strategies which will enable students to conduct a secondary classroom which is process-oriented, flexible, student-centered, integrated and experiential.

Attitude

refers to an individual's perceptions, formed by cognitions (beliefs) and emotions and an "infinity of other factors on which we have little or no information as well as those of whose existence we have not dreamed" (Ellerbroek, 1978:32), which "cause" an individual to behave in certain ways.

Chapter one has attempted to set forth the purposes of the study, as well as identifying the basic assumptions upon which the study rests. In addition, the need for the study was described and definitions of terms provided.

CHAPTER II

REVIEW OF RELATED LITERATURE

The literature review in this study focuses on five main areas: (1) attitude and behavior: a historical perspective, (2) dimensions of attitudes, (3) principles of measurement, (4) attitude measurement techniques and (5) the uses of attitude scales.

Attitudes and Behavior: A Historical Perspective

Historically, mentalistic psychology precedes response psychology, so it is not surprising that mental attitudes were given recognition earlier than motor attitudes. One of the first psychologists to employ the term attitude was Herbert Spencer (1862) who wrote

"Arriving at correct judgements on disputed questions, much depends on the attitude of mind we preserve while listening to, or taking part in, the controversy." (in Allport, 1967: 4)

This mentalistic view of attitude, still preserved in modern psychology, was later supplemented by the concept of motor attitudes.¹

¹In 1888 Lange developed a motor theory in which the process of perception was considered to be in large part a consequence of muscular preparation or 'set'; in 1889 Hasterberg developed his action theory of attention; in 1895 Baldwin proposed motor attitudes as the basis for understanding emotional expression,

Research led to the conclusion that various mental and motor sets, attitudes or states of preparedness, influence people's thoughts and actions and clearly demonstrated that the concept of attitude was indispensable. By 1901 attitude was defined as "readiness for attention or action of a definite sort."

(Allport, 1967:6) The first use of the attitude concept to explain social behavior must be credited to Thomas and Znaniecki (1918) who viewed attitudes as individual mental processes that determine a person's actual and potential responses. (Allport, 1967)

In recent years it is uncommon to find explicit labelling of an attitude as either 'motor' or 'mental'. In nearly all cases today the term appears without a qualifying adjective and retains both its original meanings. There follows a selection of current definitions and characterizations of attitude.

"... made up of three components: the 'affective' (feelings, emotions), the 'cognitive' (beliefs, knowledge) and the 'behavioral' (predisposition to respond in a particular way.)" (Brown, 1976:5)

"... in a very functional way, they are your Self." (Canfield and Wells, 1976:1)

"... the basis of all language and communication. In them is implicit all finished social behavior and through them practically all social adjustment is consummated . . . " (Bernard, 1930 reported in Fishbein, 1967:7)

"... a mental and neural state of readiness, organized

(cont'd) and Giddings (1896) and Head (1924-1925) expanded further the role of motor attitudes in social understanding. (Allport, 1967:4) What came to be known as task-attitude or Aufgabe (only one of many types and forms of attitude "discovered" by researchers) played a decisive part in nearly all psychological experiments.

through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related." (Allport, 1967:8)

". . . are reinforced by belief (cognitive component) and often attract strong feelings (emotional component) that will lead to particular forms of behavior (the action tendency component)." (Oppenheim, 1966:106)

". . . they constitute what makes an individual, psychologically, a member of groups and institutions in his social world. Conversely, they define for him what he is not." (Sherif, Sherif and Nebergall, 1965:5)

". . . involves some evaluative component - that is, affect is for or against, preparedness is to accept or to reject." (Dawes, 1972:16)

". . . the predisposition of the individual to evaluate some symbol or object or aspect of his world in a favorable or unfavorable manner . . . Attitudes include the affective, or feeling core of liking or disliking, and the cognitive, or belief, elements which describe the effect of the attitude, its character and its relations to other objects." (Katz, 1960:168)

An examination of many definitions of attitude has yielded the following comprehensive and representative view from

Allport:

"It is not easy to construct a definition of attitude sufficiently broad enough to cover the many kinds of attitudinal determination which psychologists today recognize and at the same time narrow enough to exclude those types of determination which are not ordinarily referred to as attitudes . . ." (1967:8)

While each attempt to define attitude yields added perspective, any attempt exaggerates the degree to which psychologists are in agreement. It is clear that social scientists have viewed attitudes as behavioral dispositions and, therefore, that attitudes can be used to explain human actions.

With the increasing prominence of attitude came the need to develop techniques for its measurement and, while the

measurement of attitudes is the topic of another section in this review, it is appropriate to look briefly at the effects of measurement on the perceived relationship between attitudes and behavior.

The development of Thurstone's scaling methods resulted in their widespread use in the assessment of attitudes and in the development of similar procedures. Despite concern expressed by some investigators (e.g. Allport, Lemon, Oppenheim) that the evaluative dimension alone could not capture the complexity of the attitude concept, early research seemed to confirm the validity of unidimensional attitude scales by showing that people who behave in different ways also differ in their attitudes. (It should be noted, however, that the behavioral criterion in these studies is best viewed as a behavioral pattern rather than as a specific behavior toward the object.)

The finding that groups known to differ in behaviors also differ in measured attitudes, was taken as evidence confirming the assumption of a close link between attitude and behavior. (Ajzen and Fishbein, 1980)

There were, however, investigators who tried to test the assumption that attitudes serve as behavioral pre-dispositions. Richard LaPiere's (1934) study of racial prejudice is cited as the first and best known example by Ajzen and Fishbein (1980:24). In this study, LaPiere accompanied a Chinese couple in their travels through the United States. Of the 251 establishments visited they were refused service only once.

Later LaPiere sent a letter to each establishment asking the same question: "Will you accept members of the Chinese race as guests in your establishment?" Of the 128 replies, over 90% answered "No."

For the first time serious doubts were raised about the assumption of a predictive relationship between attitude and behavior. Negative results were reported by other investigators and as they began to accumulate, it became necessary to consider possible explanations for the failure of attitudes to successfully predict behavior. One explanation was that, just as a person learns an attitude, so must s/he learn a specific response. Two people may learn to hold the same attitude toward a given stimulus but they may also learn to emit different responses given the same attitude. Both Doob (1947) and Thurstone (1931) argue that the same attitude can be expressed in different actions. Knowledge of a person's attitude can tell us something about the overall pattern of behavior though isolated single events may not apply.

Most investigators, unwilling to give up the assumption that there is a predictive link between attitudes and behavior, considered alternative explanations for the failure of attitudes to predict behavior. One such explanation flowed from the concern expressed by Allport (1967) that unidimensional affective or evaluative measures did not do justice to the complexity of the attitude concept. Despite the fact that most attitude measurement was unidimensional, the prevailing

conceptions of attitude were much more elaborate. (Ajzen and Fishbein, 1980)

By the late 1950's the multicomponent view of attitudes was adopted "almost universally and attitudes were viewed as complex systems comprising the person's beliefs about the object, his feelings toward the object and his action tendencies with respect to the object." (Ajzen and Fishbein, 1980:19) It would be difficult to assume anything but a strong relationship between attitude and behavior given this all inclusive view of attitude as encompassing all of a person's experiences with respect to an object. At the same time, however, "this multifaceted description of attitude was used to explain low empirical relations between measures of attitude and behavior." (Ajzen and Fishbein, 1980:19)

The multicomponent definition of attitude implies that all three components of affect, cognition and action, be assessed for a complete description of attitude. A cursory review of the literature, however, suggests that the assessment of all three components is unlikely to lead to improved behavior prediction. The multicomponent view did generate considerable research into the relationships between cognition, affect and conation and provided evidence that they were highly inter-related.

(Rosenberg, 1970; Fishbein, 1967; Triandis, 1971) It became clear that, although attitudes should be related to patterns of behavior, they could not be expected to predict single actions. (Campbell, 1963).

By the early 1970's, the low empirical relationship between attitude and behavior could no longer be neglected. Some investigators (e.g. Abelson, 1972) concluded that attitudes cannot predict behavior. Others, more moderate, suggested that behaviors are so dependent on situation that they are virtually unpredictable from attitude measures. Most, however, continued to regard attitudes as primary determinants of behavior. Still there was a growing awareness that there is no one-to-one correspondence between attitude and site-specific behavior.

Attitude was seen as only one of a number of factors that influence behavior and, while they produce pressure to behave consistently with them, (Freedman, Calsmith and Sears, 1970) other variables must be taken into account. Among the suggested variables are conflicting attitudes, competing motives, verbal, intellectual and social abilities, individual differences, prescriptions of proper behavior, expected or actual consequences of behavior. (Ajzen and Fishbein, 1980)

In conclusion, the attitude-behavior problem continues to require re-examination of our definition and measurement of attitudes. There is general agreement, however, that attitude, no matter how it is assessed, is only one of many factors influencing behavior. While reaffirming the importance of attitudes, this position accommodates the findings of low or inconsistent empirical relations between attitude and behavior. While a multitude of definitions of attitude still prevail, there is widespread consensus that attitudes contain affective,

cognitive and conative components and that there is a relationship between attitude and behavior that is, at the present time, still insufficiently understood.

Dimensions of Attitudes

It is helpful to think of attitudes as having various dimensions to facilitate understanding them and their measurement. These dimensions include favorableness, intensity, salience, generality, consistency and centrality or ego-involvement. Each of these dimensions is discussed in the following paragraphs.

Favorableness is the dimension most often considered and measured. It is the direction of attitude, favorable or unfavorable, for or against an attitude object of statement. The major difficulty with scales developed to order individuals along a dimension of favorableness is that, like most measures in the social sciences, they are unable to define the neutral or zero point at which the attitude is neither favorable nor unfavorable. (Lemon, 1973) Another component of attitude is needed to gain a fuller picture.

Intensity is the strength of feeling toward an attitude object--the affective component. The more favorable or unfavorable the attitude, the more intense it is; individuals who are neutral (indifferent) have the least intense attitude. Shaw and Wright (1967) suggest that attitudes will be more

intense when the attitudinal referent is seen to be particularly goal facilitating or goal inhibiting and that the greater the intensity, the greater the motivation to act in certain ways. It has also been suggested that confidence in an opinion and amount of information about the attitude object is related to attitude intensity. Both direction and intensity contribute information about attitude although no clear rationale has been developed to explain their relationship.

Saliency is the readiness with which an attitude can be aroused, that is, how close it is to the surface in a person's mind. Although the importance of studying the saliency of attitude has been emphasized by a number of authors (e.g. Cook and Selltiz, 1964; Scott, 1968) it has not been reflected in empirical research. (Lemon, 1973) Studies that have been done suggest that the more favorable an attitude, the more salient it appears (Seeleman, 1940) and that certain ways of describing or judging some object are likely to be more salient to a respondent than others. (Landfield, 1968) The little evidence that is available suggests that salient attitudes tend to be more extreme than non-salient ones and, while this does not mean that individuals who hold the same opinions are equally salient, (Lemon, 1973) the readiness of an individual to respond to attitude objects of importance to him/her or to respond to construct conceptions that are meaningful to the individual, must be acknowledged and considered in attitude measurement.

Generality is reflected by the number and variety of objects toward which a person has an internally consistent, overall attitude. Evidence indicates considerable generalization in the organization of a person's beliefs and values and many attitudes in themselves tend to be highly generalized with a wide range and substantial internal consistency. (Katz, 1960; Renners, Gage and Rumel, 1965)

Renners states that "the generality or specificity of attitudes may be considered to be a function of (1) the degree to which attitude objects or the attitudes themselves have been organized into sets by the society in which an individual lives, (2) the degree to which the structure or organization of the society has been absorbed by the individual, and (3) the narrowness with which an attitude is defined, broader, more inclusive attitudes tending to be more independent, self-contained and specific than attitudes more narrowly defined." (1972:171)

Consistency Interest in the relationship between belief, feeling and behavioral components of attitudes led to the development of various theories of attitude organization and changes known collectively as "consistency theories." These theories assume that individuals strive for consistency between their beliefs, feelings and behaviors. Most of these theories grew out of P. Heider's work on social perception and causal attribution (Ajzen and Fishbein, 1980:22) but the theory that seems to have attracted the most attention was Leon Festinger's

(1957) theory of cognitive dissonance. According to this theory, any kind of cognitive inconsistency is uncomfortable and the individual is motivated to reduce it or eliminate it. This means that an inconsistency among affective, cognitive or behavioral elements of an attitude will produce dissonance and pressures toward consistency.

There is evidence to suggest that the existence of dissonance gives rise to pressures to reduce and avoid increases in it (Kelman, 1953; Janis and King, 1954; Tannenbaum, 1966) but external pressures and extraneous considerations can cause people to behave inconsistently. Studies exploring dissonance/consistency theories have revealed numbers of different ways individuals use to attain consistency and have revealed the existence of related variables which effect the task. For example: desire for consistency between beliefs and desires (McGuire, 1960); awareness of inconsistency (McGuire, 1960; Rokeach, 1973); individual differences in cognitive complexity and flexibility (Scott, 1962); ego-involvement (McGuire, 1966); self-esteem and self-concept (McGuire and Millman, 1965; Rokeach, 1973); commitment and volition (Brehm and Cohen, 1962).

In summary, while consistency studies have been criticized on methodological grounds and on the ground that other theoretical foundations provide superior explanations (Rosenberg, 1960), consistency theories have contributed to an understanding of attitude organization and change.

Centrality and Ego-involvement In addition to these dimensions, it is important to consider the dimension of centrality. "The centrality of an attitude refers to its role as part of a value system which is closely related to the individual's self-concept." (Katz in Fishbein, 1960:460) While Rokeach and Katz describe centrality and other authors (e.g. Sherif et al, 1965; Lemon, 1973) write about ego-involvement, the two terms can be used interchangeably. Highly central attitudes are very ego-involving, tend to be more salient, more consistent and more difficult to change.

Summary

An attitude may be seen as "an idea charged with emotion which predisposes a class of actions to a particular class of social situations." (Triandis, 1971:25) It has cognitive, affective and behavioral components and helps people to adjust, to defend their egos, to express their values, and to understand the world around them. The experiences people have determine their attitudes which, in turn, affect their experiencing.

Much of the research generated emphasizes the role of attitude in determining the way individuals structure and organize their experience. The fact that some attitudes are more central than others, that reactions to stimulus objects or statements differ according to levels of concern or commitment and to information available, and that the expression of

attitudes is often dependent on how an individual perceives such expressions will be received, suggest that the psychological significance of some stands must be considered when attempts are made to develop scales to measure attitudes.

Principles of Measurement

As the previous sections have indicated, attitudes are complex and difficult to define. By comparison the logic of attitude measurement is simple, at least in its fundamentals. Basically measurement consists of collecting observations and assigning numbers to these observations according to certain rules. The measurement procedure selected is dependent on the investigator's purpose in measuring attitudes and upon his/her assumptions about the nature of attitude.

A number of different scaling models have been developed for use in converting various behavioral observations into indices which purport to give an index of underlying attitude. These scaling models have been developed using basic axiomatic systems of mathematics and probability theory and apply such axioms in depicting observations of behavior and in deriving indices of attitude.

Theoretical formulations of attitude often consist of vague or ambiguously worded statements which attempt to "describe empirical relationships but which contain little in the way of explicit axioms or formal structure." (Lemon, 1973:29) Lemon

(1973) suggests that while the rigor of such formulations varies, few approach the formality of the scaling models which have been used in attitude measurement. The relationship between a researcher's conception of attitude and the measurement method chosen is important in interpreting findings of a study and, therefore, an examination of this relationship is of importance for understanding the techniques available for measurement.

Lemon (1973), citing Lazarsfield and Barton (1951), describes the process of measurement in four progressive stages. The first stage is where the researcher forms an initial picture of the nature of the concept to be measured. Definitions of attitudes as previously listed often arise at this stage. In the next stage the investigator tries to specify the relevant dimensions which will serve as a basis for measurement. Opinions vary as to which dimensions are most important but further research may result in progress toward some consensus. The next stage is one where the investigator searches for indicators which represent the theoretical ideas guiding the research. The indicators finally chosen will determine the nature of the concept; the initial picture will be transformed by the choice of indicators. The final stage is the combination of scores into indices to represent the underlying attitude.

Researchers are confronted with fundamental questions of measurement as soon as the issue of choosing indicators and ascribing scores to indicators is raised. The investigator organizes and classifies a number of possible indicators before

choosing those deemed to be appropriate and, since indicators are only samples of behavior, distortion is bound to occur. In assigning numbers to observations and combining these numbers into some index of attitude, the investigator further organizes and classifies the data. In so doing, a classification scheme is imposed upon observations such that the observations can only be expressed in terms of the classification system. Any information which doesn't fit into this scheme is lost. The measurement process itself is thus narrowing even further the information which can be conveyed by a set of indicators and it is, therefore, particularly important that the method of measurement is complimentary to the initial conceptualization of attitude which prompted the study. (Daves, 1972)

Some theorists (e.g. Combs, 1953; Ellerbroek, 1978; Leonard, 1972) have questioned the applicability of strict axiomatic measurement models in social science.

"No such clarity is possible for human affairs in general. A social system derives from a staggering number of variables and we can rarely discover which are most important. (Leonard, 1972:127)

". . . our observations are subjective data and are not to be confused with fact." (Ellerbroek, 1978:30)

They argue that the predominant mode of conceptualization is one in which assumptions are implicit and of a non-axiomatic descriptive form, and that the application of formal models of measurement distort and transform "the measured attitude into a variable which reflects more of the scaling assumptions used to measure it than it reflects the investigator's original conception." (Lemon, 1973:31)

Opinions as to the role for measurement models is divided. Some theorists (e.g. Daves, 1972) imply that one has no alternative to imposing a system of measurement which will determine the properties of the data. Such a strategy may produce data with admirable measurement properties but may not correspond to initial theoretical formulations. Another alternative recommended by Coombs (1964) and by Glaser and Strauss (1980) is that the investigator should allow the properties of the data to emerge during the course of analysis and that data scaling assumptions should not be imposed where they cannot be born.

In practice this difference of opinion is one of how much variability within the data should be ascribed to error and how much should be accommodated within the measurement model. Some methods of data analysis make greater demands upon the data and may exclude a large number of observations which do not have the required properties to fit the model and count these data as error. Other methods of analysis will exclude less of the available data but will generate indices which are less satisfactory in terms of formal measurement. In any case, it remains true that efforts at quantification are bound to alter an investigator's initial conception to a greater or lesser extent and are going to effect the degree to which generalizations can be made. (Ellerbroek, 1978; Lemon, 1973) The nature of attitude, like any other entity which cannot be directly defined, must therefore rest upon conventions which are

generally accepted for theoretical and practical reasons.

(Daves, 1972) Understanding assumptions made by various methods is essential in planning studies, in interpreting results and in making conclusions.

Validity

One essential characteristic of a measuring instrument is that it should fulfill the purpose for which it was designed. The degree to which an instrument does this is said to be its validity. Certain formal techniques have been established to determine how well a measure does what it is designed to do. As purposes for which measures are designed vary, so also do the techniques for assessing their validity. Traditionally the purposes of techniques to assess adequacy have been:

- i. To establish a formal relationship between scores on the attitude measure and some criterion which the measure is trying to predict.
 - ii. To ensure adequate coverage of the relevant content area so that a person's performance on the measure is representative of his behavior in the attitude area . . .
 - iii. To establish the value of a person's attitude.
- (Lemon, 1973:37)

These purposes have been labelled, respectively, predictive validity, content validity and construct validity, and are normally taken as the major methods of validation. By defining the process of validation in terms of the adequacy of a measure for a particular purpose, the problem of establishing the real nature of an underlying attitude is avoided. In so doing, the

purposes of a measure are defined more operationally and there is no departure from the traditional view of validity defined in terms of the degree to which a measure measures what it claims to measure.

Assessing validity of attitude instruments is not, however, as easily done as assessing the validity of, for example, an achievement test. Many issues of interest in attitude research do not have a single criterion with which validity can be checked. Also, it may not be possible to compare a measure with some true value (since it cannot be observed directly), and comparing to several measures may not result in agreement between them. In addition, it is difficult to "know" the domain of content, i. e., the several and various meanings attached to the idea of attitude since the concept itself may not be unidimensional at all. Ultimately, the investigator's own judgement plays a large role in determining the validity of an instrument. (Remmers, 1972)

Reliability

Another essential characteristic of a measuring instrument is that it should be reliable. A reliable measure should be a sound measure of something and should measure it consistently in a variety of different situations. Reliability, basically, is concerned with how well an instrument consistently measures what it is supposed to measure. An attitude measure is reliable if it

produces the same results on different occasions and if it gives an accurate estimate of the attitude.

Essentially reliability is concerned with the amount of error in a measure--those with more error are considered to be less reliable. Since the social scientist is seldom concerned with obtaining absolute measures, s/he is more concerned with random error than systematic error. (Lemon 1973) Sources of random error may be due to the investigator, variations in content or variations in personal and situation factors over time, to name a few. Test-retest reliability, inter-judge reliability and checks for internal consistency (e.g. split half method), are some ways the reliability of an instrument is tested. To determine the reliability of an attitude measure, the degree to which an investigator attributes variations in responses to random error is again, often a matter of her/his own judgement.

Summary

In order to explain relations among variables the researcher must be concerned that measures used are both valid (serving the purpose for which they are intended) and reliable (introducing as little as error as possible). Purposes must be defined, procedures evaluated and choices made according to their suitability and relevance to the investigator's requirements. While descriptions of formal methods to assess

reliability and validity are available, it is not uncommon to find statements like ". . . a matter of the investigator's own judgement" (Lemon, 1973:37) and "Only the insightful researcher can build items which are both reliable and valid. . . ." (Bohrnstedt, 1970:97) in the literature. Such statements further demonstrate that the investigator cannot be isolated from the procedures that have been chosen.

A careful researcher must determine viability of items by sampling and resampling within the population of respondents, by sampling outside this population, by replacing, removing and revising items until s/he can be satisfied that s/he has a viable scale. These procedures can mean years in developing adequate measures but "adequate measures are a prerequisite for the demonstration of the utility of attitude measurement." (Bohrnstedt, 1970:98)

Attitude Measurement Techniques

"Scientific study of social phenomena suffers from the serious handicap that such phenomena are exceedingly difficult to describe in objective terms." (Thurstone and Chave, 1964:1) Equally difficult is the quantitative measurement of social phenomena. Nevertheless, the increasing prominence of attitude as a concept necessitates the development of techniques for its measurement.

The measurement methods that have been developed thus far can be divided into two groups: those that are considered "direct" methods of attitude measurement, usually consisting of self-reports with respect to an attitude object, and those that are considered "indirect". Probably there is not such a thing, in a literal sense, as a "direct" measure of attitude. What distinguishes a direct measure from an indirect one is the degree of understanding a respondent has of the investigator's purpose. The purpose of requesting a response is usually obvious to a subject in direct methods; in the case of indirect measures, the investigator's objective is to hide or disguise the purpose of the study.

Direct Measures

Direct measures ask respondents for self reports about their feelings, beliefs and intentions regarding the attitude object. The status of self-reports is still uncertain. One view of them is that respondents have the ability to tell the investigator what causes them to behave as they do. In this case the only criterion of what a person's attitude is, is what the respondent says it is. It requires enormous reliance on an individual's ability to articulate his/her attitude and to make complex discriminations for the purpose of measurement. DeFleur and Westie (1963) suggest that people are not capable of making accurate discriminations of this kind.

Another view, one endorsed in this study, is that "self reports are merely another form of behavior which has the same status as any other observations of behavior and which can be used in conjunction with or without these other observations as an index of attitude." (Lemon 1973:56) Certain assumptions must be made in order to measure attitudes: that attitudes can be measured, that they vary along a linear continuum, and that measurable attitudes are held by many people. Limitations of attitude measurements not implicit in these assumptions include the idea that they may be temporary, changeable and subject to rationalization and deception. (Thurstone, 1964) While it is believed that attitudes may be inferred from overt behavior, most studies have concerned themselves with opinions, expressed or endorsed, as indices of attitude. It is appropriate, therefore, to consider various types of scales that have been developed which focus on self-reports of this kind. The scale categories that follow were drawn from Reniers, 1972 and Lemon, 1973.

Apriori Scales These scales include the case method and ballot counting, as seen in various public opinion polls. Such polling devices are basically two point scales. For example, in measuring attitude toward homework a relevant item might be "Homework is necessary." The proportion of "yes" and "no" votes would be taken as an index of existing attitude for a given population.

Such a scale can be slightly refined by adding qualifying statements such as "always, sometimes, never" or "strongly agree, agree, undecided, disagree, strongly disagree." Such devices have been criticized on the ground that they are not scales in the sense of equal units on a scale.

Psychophysical Scales A major breakthrough in the assessment of attitudes came when L.L. Thurstone (1927, 1929, 1931) applied psychophysical scaling methods to the problem of attitude measurement. He argued that in all measurement we must restrict ourselves to some specified continuum along which the measurement is to take place. In essence his method consists of arranging a series of opinions/beliefs relevant to a specified attitude object, ranging from positive to negative or favorable to unfavorable, in equally spaced, experimentally determined units along a continuum. The average scale value endorsed by a subject becomes a measure of his/her attitude. (This method will be explained in greater detail later in this study.)

While criticisms of Thurstone's method have been made on the basis of the time and labor involved, the major difficulty with the method is usually in the formulation of items to represent all points on a continuum and to avoid ambiguity when there is no real means of assessing the amount of ambiguity which could be tolerated. (Remmers, 1972) Because it uses a large number of items, this method is likely to be more

representative of the spectrum of attitude than cumulative scaling but less likely to be completely unidimensional. Another difficulty that has been cited is the possibility of distortion in the determination of scale values by judges who do the sorting. Attempts to check this possibility have produced mixed results. (Hinckley, 1932; Hovland and Sherif, 1952)

Thurstone himself has pointed out as possible limitations that "attitudes may not be on a single continuum but may be discrete and that the scale values derived from a population of judges is not necessarily applicable to other populations."

(Remmers, 1954:8) Thurstone and Chave also suggest that

"The very fact that one offers a solution to a problem so complex as that of measuring differences of attitude on disputed social issues makes it evident from the start that the solution is more or less restricted in nature and that it applies only under certain assumptions" (1929:5)

Summative Scales Likert's (1932) modification of Thurstone's method is based on the questionable assumption that attitudes are distributed normally. On this assumption he used standard deviation units to measure attitudes. Between scale values obtained by this method and that of arbitrarily assigning numerical values of 1-5 to various alternate responses, he obtained a correlation of .99. (Remmers, 1972) He also reported higher coefficients of reliability by this method than by the Thurstone scoring technique.

Likert's method has received criticism because of his assumption of the normality of distribution and also because the

scales constructed without the use of judges correlated only .65 to .71 with scales using the Thurstone technique of construction. (Remmers, 1972; Seiler and Hough, 1970) Oppenheim (1966) also criticizes this method because of its lack of reproducibility, of interval measures and of a neutral point, i.,e., scores in the midrange could be due to lack of knowledge, lack of attitude or the presence of both strong positive and negative responses which balance each other out.

Summative scales are probably the most popular method of attitude construction in use today (Lemon, 1973) as they are the easiest to construct and, because of their methods of item selection and analysis, their content is less likely to be unrepresentative. On the negative side, they are likely to be multidimensional and need to be used in sufficient numbers to establish satisfactory norms. With this scaling model, as with all others, the investigator must assess the correspondence between the idea of attitude in mind and the assumptions of the scaling model. The method of summative scaling, however, is likely to continue to be a valuable tool in attitude measurement.

Master Scales Remmers' (1934, 1936, 1938) generalized or master scale method is another modification of Thurstone's method. The essential difference between the two is that in Remmers' method, the opinions which constitute the scale are incomplete sentences without subject, this being supplied at the

time of measurement. Examples of such scales are Scales to Measure Attitudes Toward Any Subject, Vocation, Institution, etc.

The scaling method, like Thurstone's method, is based on the principle that equally observed differences are equal. Such a series of master scales eliminates much of the labor involved in collecting statements and scaling them. Practically it is useful in that it is immediately available to use in measurement of current interest issues. There is a problem, however, with such generalized statements in that they may not apply with equivalent meaning to different attitude objects. (Krech and Crutchfield, 1948; Clark, 1953) These scales have also been criticized by Campbell (1953) because generality is achieved with a loss of detailed information about the structure of attitude, and by McNemar (1946) who also questions the validity of such scales based on the lack of correlation in some cases with Thurstone scales.

These generalized scales are no longer used very often but the economy of the method and the fact that they can be used "at a moment's notice" warrant their further development.

Cumulative Scaling One of two new scaling techniques which, like Thurstone and Likert scales, result in a single score representing an individual's evaluation of an attitude object, is Louis Guttman's (1944) scalogram analysis. This scale was designed to test whether a set of beliefs can be ordered,

along a single evaluative dimension. Items which can be ordered such that respondents who endorse an item in one position on the scale also endorse all items of preceding positions, are said to form a Guttman scale. The respondent's attitude index is that of the most extreme item endorsed.

Although this method has become one of the classic procedures for measuring attitudes, cumulative scales have a number of inadequacies. The assumption that the value of the attitude will be manifested in a particular response is unlikely--"it implies that each response is determined by a single underlying attribute of the respondent." (Lemon, 1973:165) There are also extreme difficulties in meeting the rigorous criteria of acceptable scales and, because of this, cumulative scales usually contain only a few items and their scale values are, therefore, likely to be widely separated. The small number of items in these scales limits the investigator's ability to make fine distinctions between respondents because of the narrow range of scores and, because the items are widely spaced, brings into question the unidimensionality of the scale. (Lemon, 1973)

Procedures for item selection based on the intuitions and interests of the investigator and selected for scaleability, reduce the likelihood of acquiring a representative selection of items. While biases in selection are common to all methods of attitude scaling, their effects are accentuated in the Guttman scale by the small number of items used to construct the scale.

Such limitation may lead the investigator to believe the attitude s/he is attempting to measure is as narrow as the items selected suggest and can result in mislabelling as well as misunderstanding.

Semantic Differential This scale, developed by Charles Osgood and his associates (1957), was seen as useful in the measurement of attitudes although originally it was designed to measure the meaning of a concept. When used as a measure of attitude it carries further the logic used by Reniers in developing his generalized scales, but instead of using statements with which a subject would agree or disagree, abstracted linguistic evaluators were used. Concepts were rated by subjects using adjectives in pairs of bipolar opposites and these ratings were then used to estimate an individual's attitude toward an object.

The semantic differential has been used frequently as a technique of attitude measurement as it is relatively easy to prepare and administer. The overall reliability and validity of the procedure is favorable and its measurements have been found to correlate highly with measurements on traditional attitude scales. (Summers, 1970; Lemon, 1973) There are, however, a few concerns with this method of attitude measurement as well.

The semantic differential technique focuses on the evaluative dimension of attitude and, while there seems to be widespread agreement that evaluation is a very essential part of

attitude, a definition of attitude as a bipolar evaluation does not do justice to the complexity which has come to be associated with the attitude concept. (Ajzen and Fishbein, 1980:55; Lemon 1973:110) In addition, social desirability ratings of these scales correlate very highly with the evaluation factor loading of the scales. Thus, if subjects want to give socially desirable answers, it may be advisable to use an instrument less direct than the semantic differential since the scale is very vulnerable to response bias. (Summers, 1970)

An additional problem, one recognized by Osgood and his associates, is that adjectives may not always mean the same thing when applied to different concepts. For example, 'sharp' has a clear specific meaning when used to describe a knife but its meaning is less precise when used to describe a teacher. The effect of this "concept scale interaction" has seldom been demonstrated when the range of concepts being measured is narrow. When the range of concepts being measured is wider, it would be wise to recompute the loadings for adjectives in this context. (Lemon, 1973:103)

Indirect Methods

Indirect methods contribute to attitude measurement, ironically, by introducing different forms of bias and error from those seen in direct methods. The primary difference between direct and indirect methods of attitude measurement is

that in the indirect method, the real purpose of the measurement is not made apparent to the individual being assessed. These techniques sample the individual's behavior and determine his/her attitude from the known or assumed relationship between the behavior and the attitude being measured.

Techniques which have been devised to 'indirectly' assess individual attitudes include word association techniques which use a subject's response to selected key words or phrases, visual stimulus methods which use pictures or drawings to elicit emotionally toned responses from a subject, expressive movement techniques which assume that attitudes are revealed and can be analyzed from the overt behavior of the subject, play or drama techniques which encourage the subject to project emotions/attitudes into a situation where they can be more easily identified and analyzed, and physiological techniques such as the galvanic skin response and measures of pupillary size. (Lemon, 1973, Oppenheim, 1966)

Numbers of other techniques have been developed to achieve some measurement of attitudes indirectly but despite the increasing attention to the development and use of such indirect techniques, the indirect measurement of attitudes is not an exact science. Problems of scoring and interpretation, lack of standardization or consistency of measurements, time and expense constraints and the fact that many methods are still in experimental stages, suggest that, while a beginning has been made, most existing techniques must still be more refined,

standardized and elaborated.

Summary

All measures have their own biases and sources of error. There are problems and difficulties in both direct and indirect measures of attitude. While theoretical and quantitative approaches are often seen as more desirable, it is not infrequent that the very essence can be squeezed out of what is to be studied whenever objective or quantitative treatment is attempted. Descriptive studies, using more indirect and subjective means of measurement are, therefore, necessary to the development of techniques. "What is required is a battery of different measures, all with their own distinctive sources of bias . . ." (Lemon, 1973:118) to enable the investigator to randomize the error arising specifically from one type of instrument or technique. The use of multiple measures, direct and indirect, broaden the conceptual basis of attitude measurement and are preferred "since they concentrate attention on a diverse set of indicators and thus minimize the risks of instrument-specific sources of systematic bias." (Lemon, 1973:118)

A point which should be kept in mind during the evaluation of methods is that, theoretically, any sample of behavior will yield some information about the subject. All techniques are therefore valuable in that they tell us something about the

subject provided we make the "correct" interpretation. The difficulties that are encountered are practical ones. Researchers are interested in obtaining as much dependable knowledge about an individual as possible, specific to purposes, and involving a minimum of time and effort. Evaluation and choice of method must be in terms of how adequately a particular technique fulfills these requirements.

Applications in Education

As the importance of the human factor is acknowledged, attitude research techniques are being employed in many areas-in business to explore customer attitudes and market trends and to determine advertising thrusts, in government to determine constituent wishes and desires, in industry in the maintenance of labor-management relations to ensure efficiency in production, and in education. It is the purpose of this section to focus on the use of attitude and opinion measurement as it has been applied to education.

The measurement of attitudes and opinions has become a vital part of the educational system and educators are making more and more use of these devices. They have been used for diagnostic purposes, for determining attitude patterns (Likert scales) and attitude changes (Guttman), for making group comparisons (Thurstone), for making predictions of future attitudes and behavior and as procedures for selection. The

insistence on learning the needs and feelings of students is a notable addition to educational methods. Also, the need for an awareness of parents' opinions has resulted in more use of attitude and opinion measuring techniques. Democratic orientation of teachers and administrators has led to the encouragement of the expression of ideas which can be evaluated and used in improving relationships within the school system. (Remmers, 1972)

Teacher training programs affirming the relationship between teacher effectiveness and teacher beliefs or perceptions are also beginning to use attitude research techniques to aid in training. (Combs, 1978) The result has been a steady growth in the educational field of attitude and opinion measurement.

Administrators are finding such measurement useful in improving public relations. They are relying more and more upon the results of such attitude measurement to keep the organization of teaching personnel harmonious. Guidance leaders are aided by such devices to learn present and possibly predictable needs, interests and directions of students. In the classroom, teachers are finding measurements useful for assessing individual needs, for arranging project groups, for finding possible sources of tensions in groups and also as a source of information in providing more meaningful content in the curriculum. In teacher education, attitude measurement is useful in helping students discover how to best use themselves as professional educators. Such a program becomes ". . .

oriented toward student perceptions . . . about self, about others, about goals and purposes, and the students' personal discovery of appropriate ways of implementing beliefs in action." (Combs, 1978:559)

Researchers in education have devised many measuring instruments. (The best single listing of instruments can be found in Buros' The Fourth Mental Measurements Yearbook.) They have analyzed data obtained with these instruments and made suggestions and recommendations for their use. The literature on research in education is vast. This cannot be an exhaustive report on the applications of attitude measurement in education. Only illustrative and representative examples of applications will be given.

Pupil Inter-relations

The classroom is a primary environment for the school age child. It is in the classroom that a child spends most of the school day and one would hope that this environment is a positive experience for the child. Charts derived from recording student choices (for teammates, captain, group leader, friend) give teachers an easily interpreted picture of the class. Such charts reveal interpersonal patterns in the group and identify those individuals who are isolated from or rejected by the group. The information provided aids teachers in arranging working groups, improving the interpersonal pattern of a class and improving social adjustment. The sociogram developed by

Moreno and his associates is one device that performs this function. ¹

Teacher and Student Relations

At the elementary level in particular, teacher opinions of students still remains mostly at the report card level as they make subjective comments of students on such aspects as cooperative attitude, sense of responsibility, work habits and other factors of the whole personality of the child. It has been suggested that more instruments are necessary which enable the teachers to express themselves in less subjective terms which can be more clearly interpreted. (Remmers, 1972)

Teachers' opinions have been sought in teacher training research to determine the importance of certain variables in the selection and training of teachers (Bowers, 1952), in relating teaching success to teacher attitude (Ringness, 1952), and in examining interpersonal relations involving students, colleagues and administrators (Wandt, 1952) to describe a few. Teachers' opinions/beliefs are a central focus in courses taught by Wassermann who works with teacher and student-teacher beliefs to help them clarify for themselves the issues of importance to them and to select strategies for implementing programs in

¹For further information about Intragroup attitude measurement and Sociometry readers are directed to Remmers 1972 p.215-222, to J.L. Moreno's Who Shall Survive 1934 and to Sociometry which serves as the main publication journal on intragroup structure and attitudes.

accordance with these beliefs (1982). It is also not uncommon to find personal belief exploration as a goal in teacher education programs.

Student opinions are frequently sought by teachers, counselors and administrators to provide information about student perceptions and to provide feedback regarding classroom characteristics and procedures for the purposes of personnel evaluation and as indicators to teachers of areas for improvement or modification. Examples of some instruments include the Diagnostic Teacher Rating Scale and the Purdue Rating Scale for Instruction. (Remmers, 1972)

Teacher and Administrator Relations

It is commonly accepted that it is part of the role of an administrator to evaluate the work of teachers--their ability to teach, their success in working with colleagues, their interactions with students, and other aspects of the teaching situation. One scale, the Purdue Rating Scale for Administrators (Remmers, 1972), turns the tables and provides for the evaluation of the administrator by his/her staff. Such exploration of attitudes and opinions is said to aid in the organization of a harmonious working environment.

Guidance and Counselling

Educational guidance concerns itself with social- emotional adjustments, adjustment to the school system, basic choices of study, and adaptation to the needs and abilities of students. Inventory type instruments, personality questionnaires and attitude scales all provide information which assist counselors in guiding student choices. Examples of instruments include the SBA Youth Inventory and the Mooney Check List. (Buros, 1970)

Vocational guidance probably makes the most use of attitude and opinion surveys. For example, the Kuder Preference Record and the Strong Vocational Interest Blank are inventories seeking to establish student interests and preferences in various fields. Student responses are then rated against established norms. While much research has been done with these instruments, it is interesting to note that recommendations are still made to include individual counselling in the decision-making process and not to base decisions on the instruments alone.

Student Personal Adjustment

Students, teachers, counselors, parents, administrators and school psychologists are all concerned with the problem of a student's personal adjustment. Many schools, lacking the facilities for complete clinical analysis, rely on inventories and attitude measurements to help discover problem areas. The

Minnesota Multiphasic Personality Inventory is one such measure and projective techniques such as the Rorschach Test may also be used to yield information about possible maladjustive behavior patterns.

Schools are making use of these techniques. By anticipating trouble spots educators may be more able to prevent or to short-circuit maladaptive behavior through their increased awareness and understanding of the needs, concerns, and problems of the student.

Attitudes Toward the Educational Process

Almost everyone who has participated in the educational process feels qualified to pass judgement on it and attempts have been made to measure opinions expressed. Collection of these opinions provides information for program development, for changing teaching methods, for assessing the needs of the community and for determining how well educational goals are perceived as being met.¹

¹"How to Teach and Learn in College" (Remmers & Harvey) and "How I Teach" (Kelley & Perkins) are two instruments looking at the educational process reported by Remmers, 1972. Readers are referred to Remmers, 1972 for further information.

Summary

The use of opinion and attitude measurement in education has become widespread. Such instruments, intelligently used, may be a source for helping all concerned--students, parents, classroom teachers, counselors and administrators. Many techniques that have been and continue to be devised may have application in the educational setting in working toward the improvement of educational methods, facilities and personnel.

Chapter Summary

This chapter reviewed the literature as it related to attitudes and their measurement. Literature was reviewed in the areas of 1) the history of attitude and behavior, 2) dimensions of attitudes, 3) principles of measurement, 4) attitude measurement techniques and 5) the applications of attitude measurement in Education.

CHAPTER III

DATA COLLECTION

The main purpose of this study was to develop an instrument which could measure attitudes held about teaching and learning which might aid in grouping individuals representative of those holding attitudes assumed to be favorable, neutral or unfavorable. An indication of student attitude is seen as potentially useful to teacher trainers to facilitate selection of students and facilitative strategies. In order to do this, two major questions needed to be answered:

1. What belief statements reflect underlying attitudes toward teaching and learning?
2. How can belief statements be scaled on a continuum?

The process of developing such a scale of attitudes involved an investigation period for the collection of statements indicative of attitudes regarding teaching and learning, the selection of samples generally representative of pre-service teachers, the development of a sorting procedure whereby subjects place each statement at some point along a favorable-unfavorable continuum, the calculation of scale values determined by graphic representations, data analysis and determination of exclusions from the study, and an analysis of differences within and between the subgroups of the sample.

There are, as has been previously noted (Principles of Measurement, page 20), no absolute criteria which dictate the choice of method of scale development. During this particular study, methodology became an evolutionary process. At the second phase of data collection, for example, the number of belief statements proved unwieldy and the end points (open and closed) could not be clearly understood by a number of the subjects. This led to the reduction by half of the number of statements and a reassessment of the definition of endpoints. What follows in this and the following chapter is a documentation of the process of discovery. Chapter 3 will describe the data collection procedures; Chapter 4 describes analysis procedures and reports findings generated from the data collection.

The Investigation period

The investigation took place in three phases. Phase I, begun in September 1981, involved the collection of belief statements by means of discussions and interviews, through a review of the literature and with the use of an open-ended questionnaire. (See Appendix A) Phase I activities resulted in a list of 214 belief statements. In Phase II, begun in January 1982, 37 students in their first semester of Simon Fraser University's teacher training program were given the 214 belief statements for rating on a 9 point open-closed continuum. Based on the resultant responses, the statements were then revised and

given to another group of 32 Education 401/402 students for rating on a 7 point favorable-unfavorable continuum. This constituted Phase III of the investigation (January 1983). Each of these Phases will be described in more detail in the following sections.

Phase I: The Collection of Belief Statements

The collection of belief statements began with the collection of written responses to open-ended statements such as "Teaching is . . . ", "Learning is . . . ", "The most important characteristic of a good teacher is . . . " These were collected from students in tutorials led by the investigator for an Educational Psychology course (Education 220) at Simon Fraser University. Additional belief statements resulted from discussions with fellow graduate students in education and with pre-service and in-service teachers during courses or workshops led or participated in by the investigator. Statements were also drawn from attitude measures reported in the literature (See Appendix B for list of measures) and from the work of a variety of authors (e.g. Raths, Wassermann, Kelly).

Further examination and discussion suggested that there were particular issues about which individuals had intense beliefs, e.g., behavior, evaluation, student and teacher performance. The investigator also was interested in the interpretation of beliefs as being "open" and "closed" when

applied to educational practices. In an attempt to ascertain the "open" and "closed" dimensions of beliefs, an open-ended questionnaire was constructed (See Appendix A) and responses were sought, on a volunteer basis, from faculty, faculty associates, sessional instructors, graduate and undergraduate students in the Education faculty at Simon Fraser. Of the 100 questionnaires distributed 28 were returned completed: 11 from faculty associates, 7 from faculty, 2 from sessional instructors and 8 from graduate students. Ten were returned blank with comments indicating time constraints presenting difficulties in responding and 62 remained outstanding.

In reviewing all of the belief statements that had been collected, it became immediately clear that attitudes toward teaching and learning are numerous, varied and complex. Statements were sorted into ten categories according to their referents--teacher behavior, student behavior, definitions of learning, educational goals, teaching strategies, evaluation, discipline, teacher-student interaction, teacher "role" definition and student "role" definition. Similar or duplicating statements were either reworded or discarded in order to produce a list of statements which could be assigned to one of the categories.

In developing the initial list, criteria were applied as suggested by Thurstone (1964:22 and 57) that:

1. Statements should be as brief as possible.

2. Statements should be worded in such a way that they may be endorsed or rejected in accordance with their agreement or disagreement with the attitude of the reader.

3. The wording of opinions should be given in the present tense to avoid conflict between past and present attitudes.

4. Double-barrelled statements should be eliminated to avoid ambiguity.

5. Statements should be worded in such a way as to make it impossible for subjects from both ends of the scale to endorse them.

6. Statements should be free from related and confusing concepts.

7. Special attention must be given to the formulation of neutral statements to avoid the danger that the scale will break into two parts.

While it was difficult to choose statements that met all the criteria with certainty, measures of ambiguity were calculated as a means of eliminating defective statements. These measures are described in Phase III of Chapter 4 of this study.

Phase II

In January 1982, 214 statements were chosen from the pool of over 1000 statements collected. These were then photocopied, each on a separate slip of paper, and a complete "set" given to each participant. Participants were then asked to sort the 214

statements into 9 piles to represent an evenly graduated series of attitudes from those considered to be "open" to those considered to be "closed". Definitions of both "open" and "closed" were provided in the instructions. (See Appendix D) Subjects were also asked to provide the following information: sex, birthdate, number of years of post-secondary education, Education course currently enrolled in, grade placement preference, number of years of previous teaching experience and associated module program. (See Appendix D) This information was requested to allow for the possibility of data comparison on these variables.

Of the 31 students volunteering to rate the 214 statements, one did not complete the task. The remaining group consisted of 21 females and 9 males in their first semester of P.D.P. with a majority having four years post secondary education (14) and no previous teaching experience (27). As can be seen from Table 3.1, no students volunteered from the Open Education module and most students were from the Multicultural and Early Childhood modules. In addition, 8 students in the Native Teacher Education Program, none of whom had any post secondary education nor any teaching experience, volunteered to rate the statements. Although this group of trainees volunteered to participate in the sorting of 214 statements on the continuum, a variety of factors intervened to make data collection from this group difficult. These factors included the following: insufficient time to complete the task, expressed difficulty with task

TABLE 3.1

Phase II Sample Detail

	ECE	MULTI	SEC	NAT.ED	TOTAL
# Participants	4	15	11	6	36
# Females	4	10	7	5	26
# Males	0	5	4	1	10
Age Range	21-28	21-35	21-40	22-39	21-40
Years Post-Secondary Education	3-7	2-5	3-6	0	0-7
Years previous teaching experience	0	0-2	0-1	0	0-2

ECE = Early Childhood Education Module
 MULTI = Multicultural Module
 SEC = Secondary Module
 NAT.ED = Native Teacher Education Program

completion, misunderstanding of directions and an hypothesized difficulty with reading the instructions. These factors would seem to militate against the "representativeness" of this particular group of teacher trainees. and, therefore, a detailed analysis of this group's responses was not undertaken.

Many volunteers confessed to experiencing a great deal of confusion and frustration in their attempts to order the statements on an open-closed continuum. For example, the investigator was frequently asked if "open" meant "good" attitudes and "closed" meant "bad" attitudes. The subjects were instructed to make their judgements based on their understanding of the information provided and on their interpretation of the statements themselves.

Initial tabulation of the data reflected this confusion as there was virtually no agreement as to whether a particular statement reflected an "open" or "closed" attitude. More than one statement, for example, was classified at every point along the continuum from "Very Open" to "Very Closed" in an almost even distribution. Additionally, the number of statements to be sorted seemed unwieldy. Some volunteers became visibly tired and several suggested the task would perhaps have been easier had there been fewer statements to deal with.

The investigator thereupon reviewed the list and eliminated a number of statements that seemed to be repetitive, double-barrelled or ambiguous, again using the Thurstone criteria. The list was reduced to 102 statements and the 9 point

continuum was reduced to seven. This was done in the hope that participants would find it easier to make less finely tuned discriminations. Finally, "open" and "closed" were scrapped as end-point labels and replaced with "favorable" and "unfavorable".

Phase III

In January 1983, 102 statements culled from the initial 214 were photocopied on slips of paper, one statement on each slip. (See Appendix E for list of statements.) A full set of 102 slips was given to each volunteer along with seven envelopes lettered "A" to "G". The "A" envelope was labelled "Very Favorable"; "D" was labelled "Neutral - neither favorable nor unfavorable" and envelope "G" was marked "Very Unfavorable". Envelopes B, C, E and F carried no descriptive labels. Participants were asked to sort the statements into seven piles to represent an evenly graduated series of attitudes ranging from those considered favorable to those considered unfavorable. Detailed instructions given to participants are found in Appendix F.

Thirty-two students in their first semester of the teacher training program volunteered to sort the 102 statements. Of these, for reasons explained in the Exclusions section following, six participants were excluded from the study. Of the 26 remaining, this group was made up of 17 females and 9 males. It should be noted that no students from the Multicultural

module participated and there were only two volunteers from the Secondary module. Of the Early Childhood module students responding, the majority (11) had 2-4 years post-secondary education prior to entering the teacher training program while the majority (7) of the Open Education module students had more than three years post secondary education. Both groups had an average of one year teaching experience before entering the program. (See Table 3.2 for a more detailed description of the Phase III sample).

Exclusions from the Study

Since it was not possible for the investigator to observe each respondent at work, it was expected that some might experience some difficulty in understanding the written procedures. It was decided, therefore, that any respondent who placed one third or more statements in any one envelope, or who did not completely sort all the items, would be excluded. These criteria are similar to those defined by Thurstone for excluding subjects. This eliminated those volunteers who were believed to have misunderstood directions or demonstrated that they had misunderstood the instructions. In Phase III of the study, 6 of the 32 participants were eliminated by these criteria.

TABLE 3.2

Phase III Sample Detail

	ECE*	OEA*	SEC	TOTAL
# Participants	19	11	2	32
# Females	16	5	0	21
# Males	3	6	2	11
Age Range	21-34	21-33	22-36	21-36
Years Post-Secondary Education	2-7	0-5	5-7	0-7
Years previous teaching experience	0-6	0-6	0-9	0-9

ECE = Early Childhood Education Module
 OEA = Open Education Alternative Module
 SEC = Secondary Module

* Sample details: participants before exclusions.

Summary

This chapter described subjects from whom data was collected and procedures of data collection for each of the three phases of the study. A rationale for excluding some participants was also provided.

CHAPTER IV

DATA ANALYSIS AND DISCUSSION OF FINDINGS

The purpose of the study was to develop an instrument which could measure attitudes about teaching and learning which might aid in separating pre-service teachers into instructional groups representing those (holding attitudes seen as favorable, neutral or unfavorable.) In order to determine a) the nature of beliefs held about teaching and learning, b) (whether there was agreement about the "positive" or "negative" nature of particular belief statements,) and c) (to explore similarities and differences (if any) among subjects in the sample,) a number of belief statements were collected and given to a sample of pre-service teachers who acted as judges for the placement of these statements on a favorable-unfavorable continuum.

The three phases of this study explored these ends. This chapter will discuss analyses done and the findings for each of the phases of the investigation. Discussion will include both quantitative and qualitative perspectives. Conclusions resulting from these findings, along with implications pertaining to this study and implications for further research, will be discussed in Chapter 5.

Phase I

Phase I of the study involved the collection of data in an attempt to shed light on the nature of beliefs about teaching and learning. The findings suggested by the data for Phase I are presented in two parts: first, those findings related to a review of statements from the existing literature, and second, findings related to the open-ended questionnaire.

Previously Reported Attitude Measurements

A review of statements drawn from attitude measures reported in the literature (See Appendix B) reveal various different characteristics. Many measures (e.g. Shaw and Wright Exhibit 3-14: "Attitude Toward Education"; Form PCI; Education Scale VII) contain statements which are not personalized statements of belief. For example, "A course should be made so easy that few people would fail them." (Exhibit 3-14); "It is desirable to require pupils to sit in assigned seats during assemblies." (Form PCI); "What is needed in the modern classroom is a revival of the authority of the teachers." (Education Scale VII)

Some measures (e.g. Shaw and Wright Exhibit 3-7: "Attitude Toward the Use of Fear as a Means of Controlling the Behavior of Children"; Proposition about Reading Instruction) contain statements which posit a more personal involvement or commitment

on the part of respondents. This was done by prefacing statements with "I" (I believe; I feel; I am concerned). For example: "I believe that basal textbook materials are an important part of good instructional programs in reading." (Proposition about Reading Instruction); "I feel that scaring children to control their behavior always makes cowards of them." (Exhibit 3-7)

Some measures include more than one idea or are "double-barrelled" statements. For example, "The curriculum consists of subject matter to be learned and skills to be acquired." (Education Scale VII) Statements of this kind do not meet Thurstone's fourth and sixth criteria for item selection as has been described in Chapter 3, page 51.

Some measures include statements which can be perceived as being either extremely favorable or extremely unfavorable attitudes for a teacher to hold depending on an individual's position. For example, "There are many things that a student must learn whether he wants to or not."; "Learning occurs often via a haphazard, non-sequential, frequently confused process." (C-1) Statements such as these do not meet Thurstone's fifth criterion for item selection that "statements should be worded in such a way as to make it impossible for subjects from both ends of the scale to endorse them."

All statements drawn from attitude measures reported in the literature reviewed were written in the present tense and do meet Thurstone's third criterion of writing statements in the

present tense "to avoid conflict between past and present attitudes."

Almost all measures included brief, rather than lengthy statements of belief and, therefore, meet Thurstone's first criterion that statements should be as brief as possible.

The findings from an examination of attitude measures reveal a wide spectrum of alternative kinds of statements contained in the different measures. In effect, there is no clear consistency from measure to measure which informs us about how measurement instruments ought to be developed. Moreover, many instruments developed contain statements that fall far short of Thurstone's requirements for writing attitude statements.

The Open-ended Questionnaire

The findings emerging from the data gathered on the open-ended questionnaire (Page 50, Chapter 3) are of two types:

- 1) findings based on the number of responses (quantitative) and
- 2) findings based on the type of responses (qualitative).

Number of Responses The table on page 64 shows the number of open-ended questionnaires returned by each of five groups. The highest number of returned questionnaires came from those individuals most directly involved with the Professional Development Program. Twenty percent of sessional instructors and

TABLE 4.1

Detail of Open-ended Questionnaire:
Number of Returns

	Possible Returns*	Directly Distributed	Number Returned	Percentage of Possible Returns Received
Faculty	41	41	7	17
Faculty Associates	24	24	7	29
PDP Coordinators	9	9	4	44
Sessional Instructors	10	0	2	20
Graduate Students	29	0	8	28
Blanks Returned			10	

* Numbers obtained from Faculty of Education Members listing

28% of graduate students returned the questionnaire although questionnaires were not sent to these groups directly. They obtained their questionnaires from envelopes posted in the two education offices and in the Education graduate student correspondence center. Comparatively, only 17% of faculty members, all of whom received a copy of the questionnaire, responded. Twenty-eight percent of questionnaires were returned completed.

The data indicate that more than one quarter of the sample group returned questionnaires. The largest number of responses, coming from Faculty, Faculty Associates and Graduate students, were the ones most influential in the findings which follow.

Types of Responses The open-ended questionnaire attempted to gather information about subjects' beliefs about teaching and learning. These data were to be used in the compilation of a "pool" of belief statements from which a scale would eventually be built.

Twenty-eight respondents completed twenty open-ended statements. The responses proved virtually impossible to tabulate because similar categories did not emerge for each statement. Samples of responses are presented in Appendix C.

In the categorization that follows, distinctions have been collapsed and the data are treated from a collective perspective. The following findings emerged:

Statement 1: "Teaching is . . . " Responses to this statement tended to be of two types: 1) personal responses such as "rewarding," "demanding," "an artform" and 2) responses that contained action components such as "helping," "creating environments," "transmitting knowledge." Responses were distributed about equally in these two categories with graduate students tending to make statements that were more personal rather than action oriented.

Statement 2: "Learning is . . . " Responses to this statement tended again to be either "personal" or "action oriented." Statements with an action orientation were either teacher-related (e.g. what a teacher needs to do to promote learning), or student-related (e.g. describing the process of learning for the learner.) About half of the responses dealt with student-related actions, such as "experiencing," and "using feedback." Approximately one third of the responses were personal, emotional statements such as "powerful" and "exciting".

Statements 3 and 4: "A closed system of education . . . " "An open system of education . . . " Most responses to these two statements referred to ways in which such systems affect students, teachers and programs. Some were either not completed or completed graphically, i.e., with pictures. Others described existing systems of education.

Statement 5: "The most important objective in education is . . . " Almost all responses focused on the development of

the learner with primary emphasis on promoting a sense of self worth or a positive self-concept. Motivating learners and promoting thinking and autonomous learning also received frequent mention as objectives.

Statement 6: "Grading is. . ." Half of the responses reflected negative feelings about grading, describing it variously as boring, unessential, arbitrary and frequently hurtful and/or detrimental to the learner. Two of four respondents who suggested that grading was useful, qualified their statements with "when wisely handled" and "when used with care." Other respondents viewed grading as being "necessary" or "required" or provided definitions.

Statement 7: "A teacher's most important job is to . . ." Responses to this statement proved more difficult to categorize because they tended to be very similar. Responses were basically concerned with the growth and development of the learner through "care," "encouragement," "support," and by providing "optimum learning situations."

Statement 8: "The best students are . . ." The best students were described as those who were "open," "responsive," "self-motivated" and "actively interested." Only one respondent listed "good work habits" as indicative of best students and five respondents made no response.

Statement 9: "The worst students are . . ." The worst students were identified in two ways: 1) by their behavior (defensive, passive, unquestioning) and 2) by their feelings

about themselves (unhappy, poor self-concept, lack of self-respect.) Worst students were identified by respondents more often by specific behaviors than by students' feelings about themselves. Eight individuals did not respond.

Statement 10: "A teacher is doing a great job when . . ." Almost all respondents suggested that the way in which students felt about learning and about themselves and how they engaged the learning process, were indicators of the kind of job a teacher was doing. If they were "enthusiastic," "happy," "self-motivated," then the teacher was doing a good job. Other respondents suggested that the teacher's behavior ("well-prepared") or feelings about teaching ("loves to come to class") were indicative of a job well done.

Statement 11: "A teacher is doing a poor job when . . ." As in the previous statement, many responses suggested that one could identify a teacher who was doing a poor job by observing teacher and student behaviors and by learning how each felt about themselves and the learning process. Sixteen respondents emphasized observations of students; ten emphasized observations of teachers and two respondents included both factors as important in assessing what kind of job was being done.

Statement 12: "Children's capabilities . . ." More than half of the respondents described children's capabilities as "endless," "unlimited," "immense," "vast," "greater than our expectations," and "generally underestimated." Others suggested

that they varied from student to student, were at times difficult to determine and "should be nurtured."

Statement 13: "Children's difficulties . . . "

Children's difficulties were also described as "endless," "unlimited" and "numerous" by some respondents but others suggested that they were "limited" and "often over-estimated." Twenty-five percent of the respondents suggested reasons for children's difficulties: "lack of confidence," "broken or unstable homes" and "teacher incompetence." Another 25% of the group indicated that difficulties "can be overcome" and "need to be accepted and worked with."

Statement 14: "The best way to deal with behavioral problems . . . " All responses were action oriented and suggested various strategies for dealing with behavior problems. Over 25% listed "understanding," "acknowledgement," "support," and "willingness to listen" as the best strategies. Twenty-five percent pointed to identifying and treating causes. Others suggested "enlisting student help" and looking at teacher contributions to the problems.

Statement 15: "Most students . . . " The most frequent response to this statement was that students "want to learn." Other frequent responses were that students "are great" and also that they are at times "adversely affected by schools." Miscellaneous responses suggested that students "thrive on attention," "fear ridicule" and "are able to set their own goals." Three individuals did not respond to the statement and

two gave responses unrelated to teaching and/or learning.

Statement 16: "Learning things is hard if . . ."

Responses to this statement broke almost equally into four categories of factors affecting learning, e.g., 1) lack of interest, relevance or value; 2) "low self confidence" or a "lack of belief in self"; 3) "other things get in the way" (home, illness) and 4) the teacher "is no help," "doesn't control the environment," or "is unclear."

Statement 17: "Students really appreciate it when teachers . . ."

Over half of the respondents suggested that student appreciation came about when teachers "care," "respect," "value" and "are interested in them." Equal numbers of respondents suggested that teachers who "are prepared," "listen" and "act human" would receive student appreciation.

Statement 18: "Students really hate it when teachers . . ."

Responses to this statement were, once again, difficult to categorize, but mocking and ridicule were most often cited as teacher actions students really hate. Inflexibility, unfairness, an inability to listen and a lack of caring were also cited.

Statement 19: "Parents expect schools to . . ."

The most frequent expectation cited was one of providing skills and preparing students for the work force. There were several other types of responses including "do everything" and "perform miracles," "babysit," "give students what they (the parents) did not have" and "educate in spite of parent interference."

Statement 20: "Society expects schools to . . . "

Although almost all responses to this statement listed promoting "social aims", many included facetious or sarcastic comments, e.g., "make students invisible" and "passive"; "teaching students not to rock the boat"; "save money"; "do everything for nothing." Four respondents listed the promotion of literacy as a primary expectation society has of schools.

Summary of Findings from Phase I

This section reported the findings from Phase I of the study in two parts. First, a number of observations were made as a result of an examination of attitude measures found in the literature. It was discovered that current attitude measures contain a wide spectrum of alternative kinds of statements, that no clear consistency exists from measure to measure which informs us about how measurement instruments ought to be developed, and, that most instruments fall far short of Thurstone's requirements for writing attitude statements.

Second, findings emerging from the distribution of an open-ended questionnaire were reported. These included an analysis of the number of returns and a description of the kind of responses received to each of the open-ended statements. An analysis of the number of returns indicated that the highest percentage of returns were received from those individuals most active in the Professional Development Program. The

categorization of the responses to the 20 open-ended statements revealed that subjects, although varied in their responses, provided similar responses to most statements.

Phase II

Phase II of the study was also concerned with the determination of the nature of beliefs about teaching and learning as well as with the determination of possible agreement about the "positive" and "negative" valences of belief statements. To a lesser extent this phase also explored similarities and differences among subjects in the sample. To these ends, data were gathered by way of subject sorting of 214 belief statements on a nine point "open-closed" continuum. (These procedures are more fully described on pages 52 in Chapter 3.) This section analyzes the subject sorting of these 214 statements. The analyses include responses from the students enrolled in the Native Teacher Education program as well as from three different modules of the Professional Development Program.

Analysis of the Data from the Native Teacher Education Program

The fact that this group required more time than the rest of the sample to complete the task, that a lack of understanding was evidenced in the completion of the personal information sheet, and that they had, in fact, received some teacher training, suggested that this group's responses would not be representative of the general population of pre-service teacher trainees. For this reason the data from this group is excluded

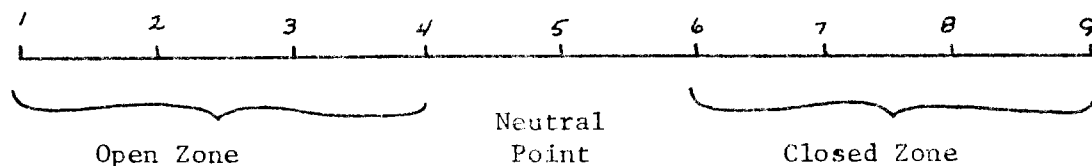
from the findings. However, data from this group are tabled in Appendix G for the interested reader.

Observations from Three Modules of the Professional Development Program Sample

All respondents found the task of sorting statements particularly difficult and cited the following as the principal problems: the large number of statements that were to be sorted, the fine distinctions that were called for, and the confusion in the interpretation of "open" and "closed." While a few subjects responded positively to the task because it caused them to reflect upon their beliefs about teaching and learning, most subjects reported frustration and exhaustion after the task was completed.

Frequency distributions of the responses for each statement were calculated. In scanning these distributions it was found that a single statement was capable of being placed at several points on the continuum. That is, one statement would be scaled at all points from "Very Open" to "Very Closed." As a result, further analysis was not attempted. These results, however, did lead the investigator to eliminate a number of statements, reduce the nine-point continuum to seven, and to change the end points from "open" and "closed" to "favorable" and "unfavorable" in Phase III of the study.

While an attempt was not made to calculate scale and Q values for each statement as was initially intended, an analysis of the returns based on the number of statements placed in different zones of the continuum was done. These results are reported in Tables 4.2 and 4.3 on pages 76 and 77. First the number of statements placed in the "open" zone of the continuum (Points 1-4: "Very Open" to "Slightly Open"), at the neutral point (point 5) and in the "closed" zone (Points 6-9: "Very Closed" to "Slightly Closed") were recorded. (Table 4.2)



This served to break the continuum into three parts, everything left of neutral considered "open" and everything right of neutral considered "closed", to determine whether statements tended to be rated as "open" or "closed" more frequently.

A second analysis (See Table 4.3) shows the distribution of statements across three equal zones: the "Open" zone (Points 1-3), the neutral zone (Points 4-6), and the "Closed" zone (Points 7-9). The purpose of this analysis was to determine the power of the neutral zone in the rating of statements.

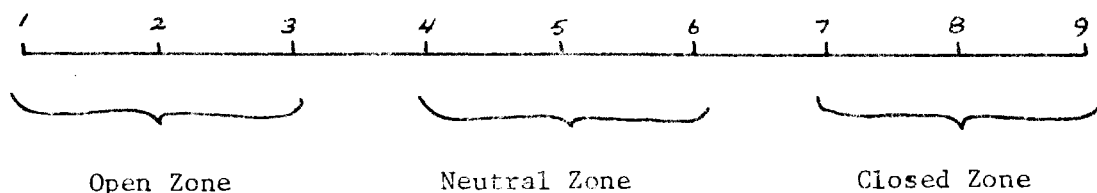


TABLE 4.2

Statements Placed in Each of 3 Zones of the Continuum
By Each Sample Sub-group: Analysis 1

Group Description	Relatively Favorable (Points 1-4)			Neutral (Point 5)			Relatively Unfavorable (Points 6-9)		
	No. of Stmtts	%	% Range	No. of Stmtts	%	% Range	No. of Stmtts	%	% Range
Multicultural	1181	36.8	15-48	340	10.6	4-28	1688	52.6	36-75
Early Childhood	326	38.1	31-42	68	7.9	4-12	462	54.0	50-65
Secondary	873	37.1	23-46	160	6.8	0-15	1320	56.1	46-74
Total	2380	37.1	15-48	568	8.9	0-28	3470	54.1	36-75

TABLE 4.3

Statements Placed in Each of 3 Zones of the Continuum
By Each Sample Sub-group: Analysis 2

Group Description	Favorable (Points 1-3)			Neutral (Points 4-6)			Unfavorable (Points 7-9)		
	No. of Stmt's	%	Range	No. of Stmt's	%	Range	No. of Stmt's	%	Range
Multicultural	898	28.0	7-41	915	28.5	8-48	1396	43.5	23-71
Early Childhood	278	32.5	29-38	180	21.0	9-33	398	46.5	38-61
Secondary	566	24.1	7-35	743	31.2	19-49	1044	44.4	20-66
Total	1742	27.1	7-41	1838	28.6	8-49	2838	44.2	20-71

Both analyses revealed that all three module groups, Multicultural, Early Childhood and Secondary, regarded more of the statements as indicative of a "closed" attitude. The second analysis revealed some differences between groups. The Multicultural module group placed approximately the same number of statements in the open and neutral zones (28% and 28.5%). The Early Childhood module group perceived fewer statements as neutral rather than open (Neutral 21%; Open 32.5%), while the Secondary module group placed slightly more of the statements in the neutral zone than in the open zone (Neutral 31.2%; Open 24.1%). The group as a whole placed more of the statements in the closed zone (44.2%) and slightly more statements in the neutral zone than in the open zone (28.6% versus 27.1%).

Summary of Findings from Phase II

All subjects reported difficulty in completing the task outlined and described it as a frustrating experience. The difficulties and evident lack of understanding of the Native Teacher Education Program group, and the fact that they had some prior teacher training, suggested that this group did not constitute a representative sample. As a consequence the data from this group were excluded from the findings. Data from this group are, however, examined separately in Appendix G.

The Professional Development Program subjects from the three modules examined perceived more of the statements as

indicative of a "closed" attitude and placed only slightly more statements in the neutral zone (28.6%) than in the "open" zone (27.1%). Because it was found that subjects had difficulty with the task and that there was minimal agreement about the "openness" or "closedness" of individual statements, the task was reassessed and redesigned for use in Phase III of this study.

Phase III

In Phase III of the study, data were gathered through the sorting of 102 statements on a seven point favorable-unfavorable continuum by 26 teacher trainees from three modules, Early Childhood, Open Education and Secondary, in the Professional Development Program. (These procedures are more fully described on page 56 in Chapter 3.) This was done to a) determine the nature of students' beliefs held about teaching and learning, b) determine whether there was agreement about the positive or negative nature of particular belief statements, and c) explore similarities and differences (if any) among subjects in the sample.

This section analyzes the subject sorting of 102 statements. Findings related to the whole sample and findings related to a comparison of module sub-groups (emphasizing the comparison between Early Childhood and Open Education modules) are reported. Descriptions of procedures used in the analysis are described.

Analysis and Findings of the Whole Sample

In this first section, findings generated from the data analysis of the Phase III sample as a whole are reported. The findings suggested by the data are reported as they relate to a)

the frequency with which each point on the continuum was selected for rating the statements, b) the distribution of statements on the continuum as determined by rounded scale values, c) an examination of the ambiguity of statements as determined by their Q values, d) the variation in ambiguity across the continuum, and e) a comparison of statements selected by the original (unadjusted) and adjusted samples as representative of unfavorable, favorable and neutral statements of attitude. Each analysis describes differences between the unadjusted sample and the sample after subjects were eliminated. It will be recalled that some subjects were removed because of their tendency to rate more than one third of the statements at one point of the scale.

Frequency Distributions To examine variation in rating tendency, frequency distributions of the number of times each point of the continuum was selected for rating statements was calculated. These are reported in Table 4.4. This was done for both the unadjusted and adjusted samples. A graphic representation of these distributions is shown in Graph 4.1 page 83.

As can be seen from the graph, point 7, the unfavorable end of the continuum, was used most frequently to rate the statements. The distribution of ratings was similar for both samples although there was a decrease in the use of the extreme points of the continuum by the adjusted sample, markedly at the

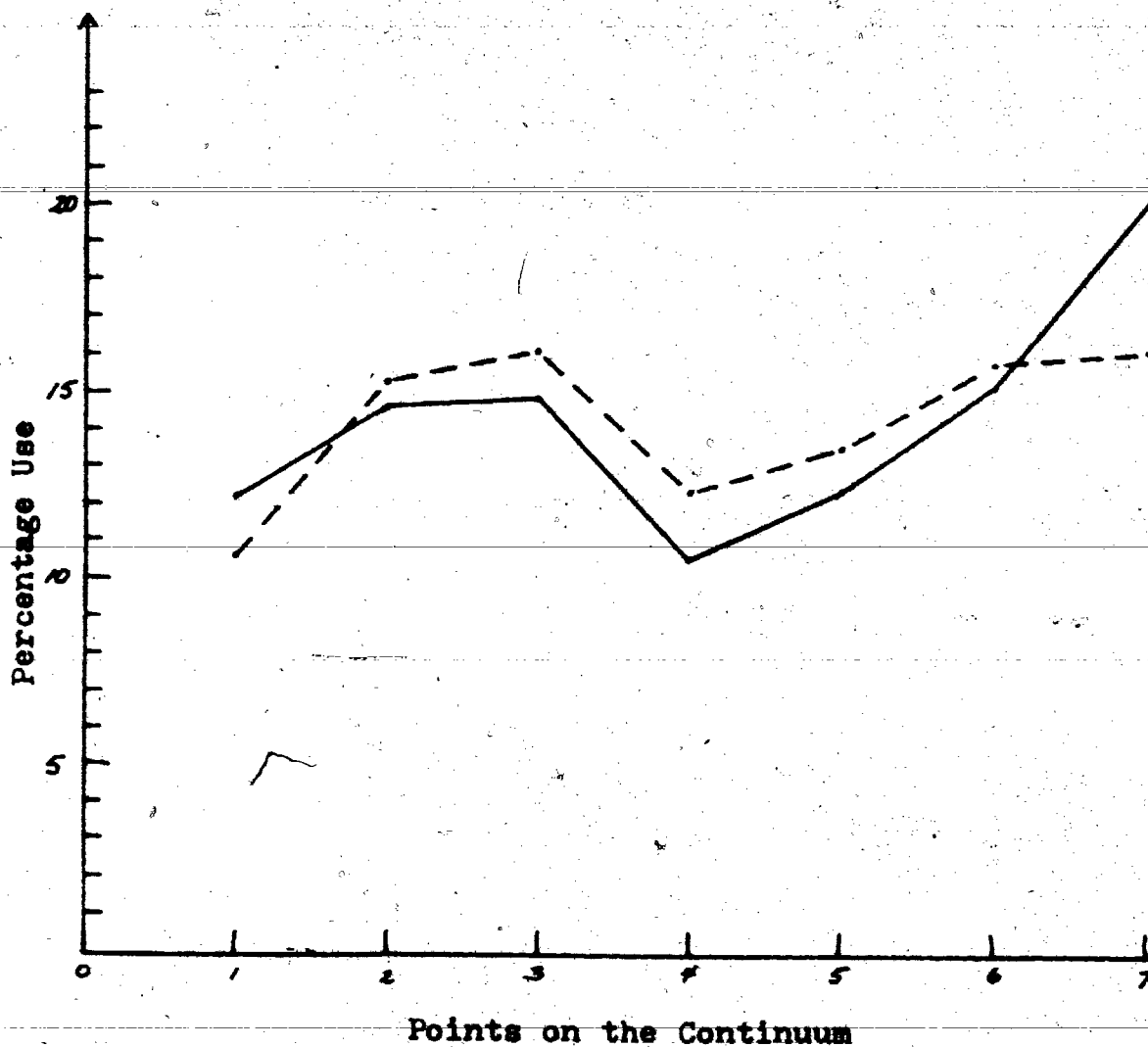
TABLE 4.4

Comparison of Unadjusted and Adjusted Samples
in the Use of Point Ratings

Point	Unadjusted		Adjusted	
	#	%	#	%
1 Very Favorable	398	12.2	282	10.6
2	477	14.6	405	15.3
3	485	14.9	427	16.1
4 Neutral	346	10.6	327	12.3
5	404	12.4	361	13.6
6	496	15.2	418	15.8
7 Very Un Favorable	658	20.2	432	16.3

GRAPH 4.1

**Comparison of Unadjusted and Adjusted Samples
in the Use of Point Ratings**



— The Unadjusted Sample n=32

- - - The Adjusted Sample n=26

most unfavorable point, point 7. (This is understandable since subjects were excluded because they placed more than 33% of the statements at point 7.) There was an increase in the use of all other points.

The data are insufficient to indicate whether the tendency of the excluded subjects to rate more statements at point 7 is a result of their inability to discriminate between statements in the unfavorable end of the continuum (and therefore place them in the same category), or whether they reflect variations in the respondents' interpretation of statements.

Since the largest number of statements was rated at point 7 by both samples, and since there is otherwise very little difference in the distributions of the two samples, it might not have been necessary to eliminate subjects because of a tendency to rate a large number of statements at one particular point on the continuum.

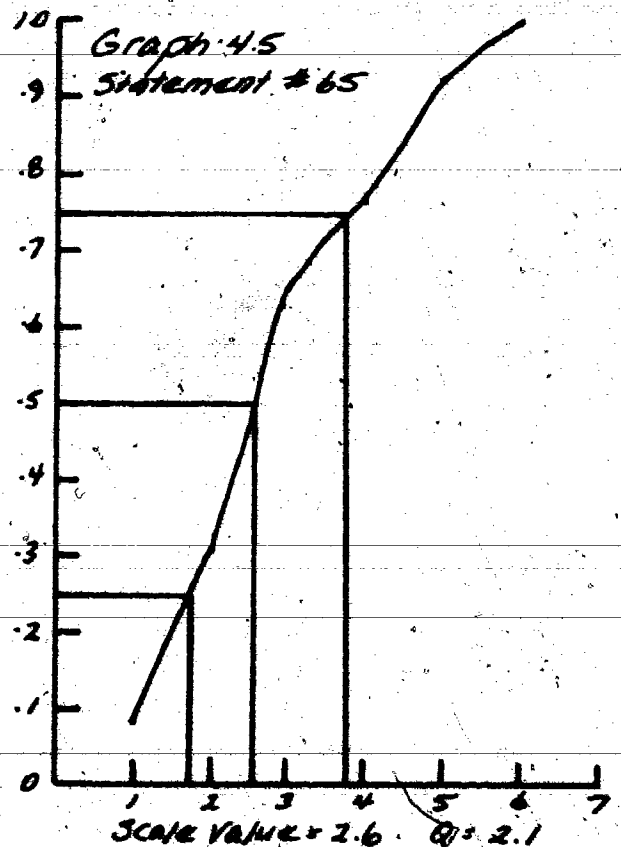
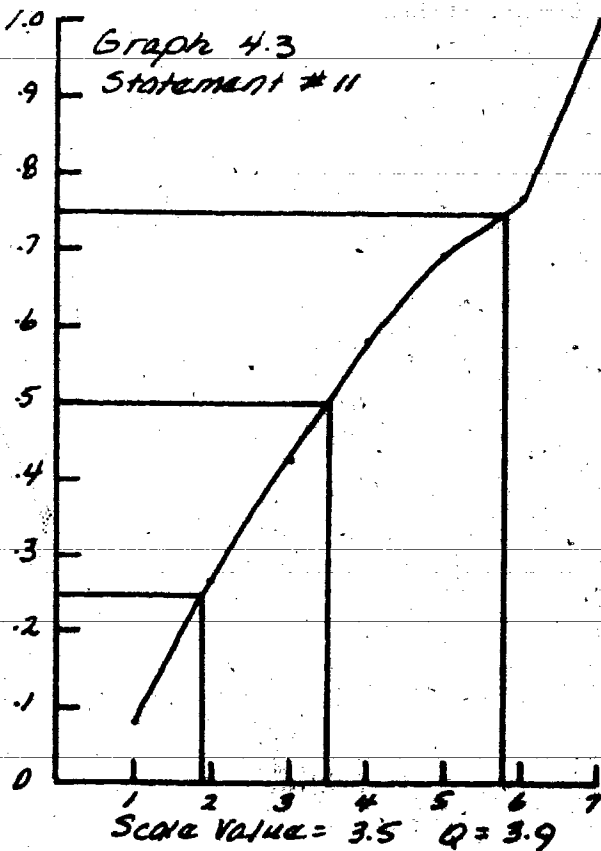
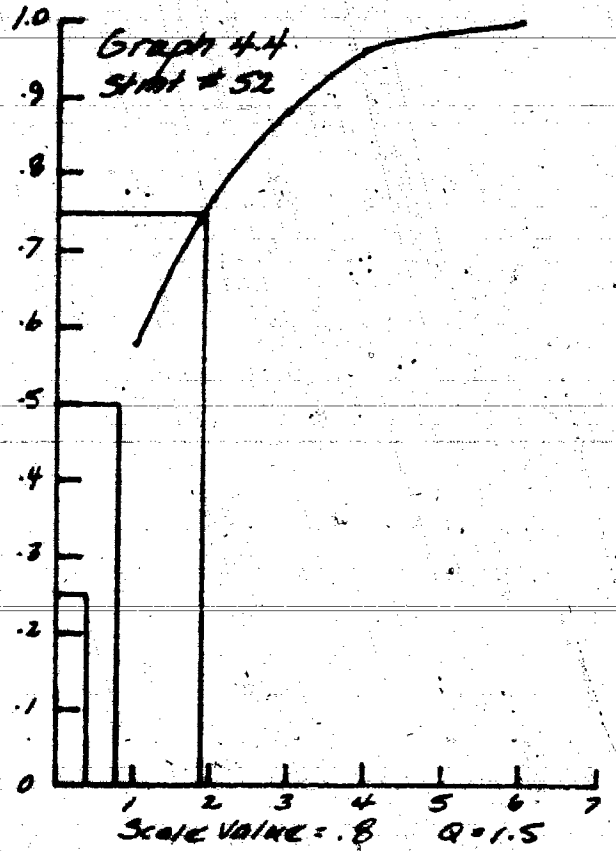
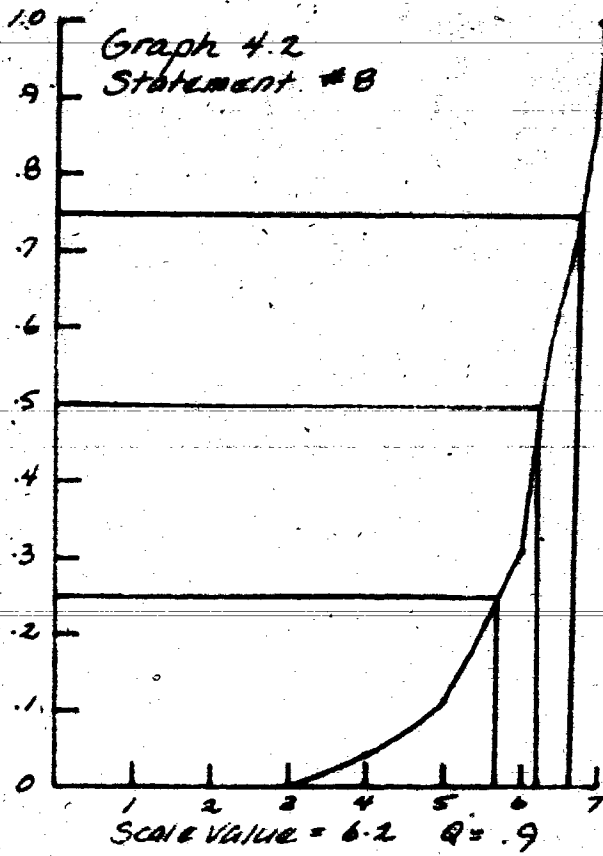
Subjects did not select points with the same consistency across the continuum. The question still remains whether this is due to rating tendency or statement interpretation.

The range over which statements were rated before and after excluding subjects was also examined. For example, in the unadjusted sample, statement #62 was rated from points 2-7; the adjusted sample rated it from points 4-7. It was found that statements were rated by the adjusted sample over a slightly smaller range in some cases than the unadjusted sample.

It is important at this point to describe the analysis procedures from which the findings which follow were generated. Returns were tabulated to show the lettered envelope in which every one of the 102 statements was placed. Accumulative proportions were calculated and graphed, and scale values and Q values were determined for each statement. Scale value is taken as an index of the position of a statement on the attitude continuum. The Q value is taken as a measure of the ambiguity of a statement and is concerned with the spread of a statement on a subjective scale. Graphs 4.2-4.5 illustrate these procedures.

Graph 4.5 represents statement No. 65: "Students who will not do their work must be helped in every way possible." This graph is plotted directly from accumulative proportions. The curve of Graph 4.5 crosses the 50% level at 2.6 (indicating a somewhat favorable attitude) and this is assigned as the scale value for the statement. The scale value shows that one half of the raters classified this statement showing a more favorable attitude than 2.6 and half classified the statement as less favorable than the 2.6 position reflects.

The scale value is shown by the center vertical line. On either side, two additional vertical lines indicate the 25th and 75th centile points for the curve. In Graph 4.5, these two vertical lines are located at scale values of 1.7 and 3.8 respectively. The separation between these lines is a measure of the ambiguity of the statement. If a statement is concise and uniform in the meaning it conveys to all readers, then it is



placed at approximately the same position on the scale, the distance between these two lines will be small and the Q value correspondingly low. If the statement is ambiguous, different readers will place it over a wide range on the scale and the Q value will be correspondingly high. In this case, the ambiguity or Q value is 2.1 which is simply the difference between 1.7 and 3.8.

Graph 4.2 shows the graph for statement No. 8: "The threat of failure is a good device for motivating children to learn." This statement was judged rather uniformly and has a low ambiguity, Q value, of .9, and a scale value of 6.2. All participants classified the statement in the three intervals, 4-7, indicating this to be an unfavorable attitude for a teacher to hold.

In contrast is the more ambiguous statement No. 11: "Teachers must sometimes act outside or in contradiction with their beliefs." This statement is represented in Graph 4.3 with the scale value 3.5 and Q value 3.9. Note that the statement spreads over six intervals (1-7). Such a statement would be eliminated from a final scale due to the high ambiguity given directly by the Q value.

Graph 4.4 represents statement No. 52: "It is more important for students to learn cooperation in working together than to learn competition." More than half of the readers place this statement in the first of the seven piles. The 25th and 50th centile points were obtained by continuing the curve. This

statement has a scale value of .8 and a Q value of 1.5.

Of the four statements represented by these graphs, statement No. 8 (Graph 4.2), is perceived as reflecting the most unfavorable attitude and is also the least ambiguous. Statement No. 52 (Graph 4.4) is perceived as reflecting the most favorable attitude. Subjects judged statement No. 11 (Graph 4.3) to be most reflective of a rather neutral attitude and it is also the most ambiguous (Q value = 3.9) of the four statements represented. (See Appendices H and I for the summary of the sorting of the 102 statements)

Rounded Scale Values Procedures for the calculation of scale values have been described in the preceding paragraphs. The scale value assigned to a statement is an indication of the degree to which that statement is seen as reflective of a favorable or unfavorable attitude. For example, a statement with a scale value of 7.0 is a statement reflecting a "Very Unfavorable" attitude.

To develop a scale, an investigator must have a pool of statements which have been assigned scale values representing a full spectrum of points across the continuum. In addition, these statements must have acceptable Q values. (These are further discussed in the following section.) In this study, acceptable statements were insufficiently spread across the continuum so that it was impossible to select statements representative of points approximately equidistant from each other across the

whole continuum. In fact, in the adjusted sample, no statements were scaled at points greater than 6.5 and the final continuum would have had to have been collapsed to eliminate extreme points. Thus, the use of the scale would be questionable. (Cumulative frequencies and scale values are reported in Appendices H & I; graphs are included in Appendices J & K.)

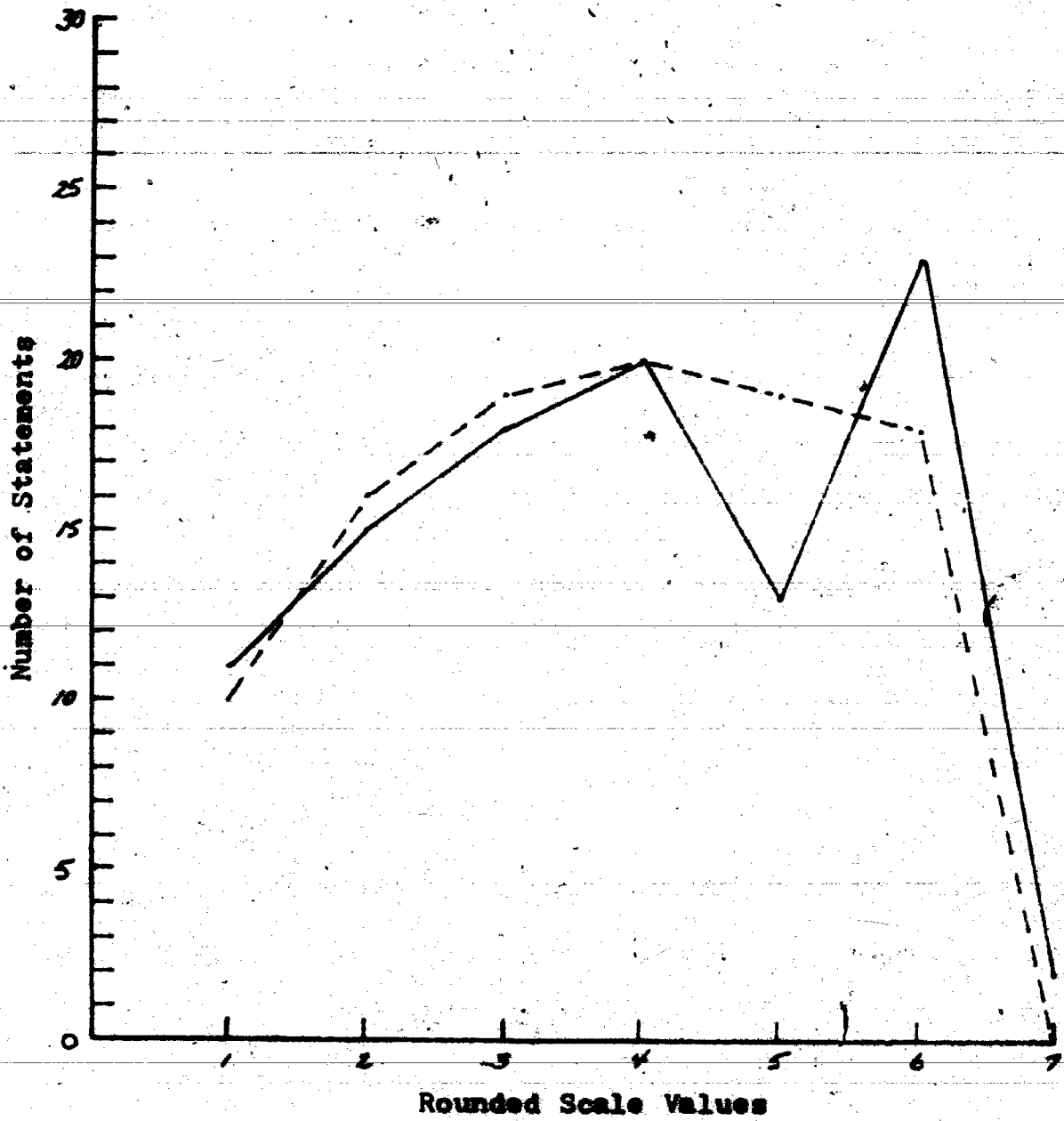
Graph 4.6 shows a comparison of the adjusted and unadjusted samples based on the distribution of the rounded scale values of statements. As a result of the sample adjustment, the greatest shift in number of statements scaled at a particular point occurred at points 5 and 6, but the shifts were in opposite directions. (In the adjusted sample, fewer statements were scaled at point 6 and more were scaled at point 5.) There was, in fact, very little difference in the total number of statements scaled at the unfavorable end of the continuum. Table 4.5 below summarizes the number of statements scaled in each area of the continuum.

TABLE 4.5: Number of Statements Scaled in each Zone

Zone	Unadjusted Sample	Adjusted Sample
Favorable Points 1-3	44	45
Neutral Points 3-5	51	58
Unfavorable Points 5-7	38	37

GRAPH 4.6

Comparison of Unadjusted and Adjusted Samples in the Distribution of Statements Based on Rounded Scale Values



— The Unadjusted Sample

- - - The Adjusted Sample

The data suggest that it may not be necessary to eliminate subjects for the reason of preferential rating at one point.

Q Values The Q value is taken as a measure of the ambiguity of a statement and is concerned with the spread of a statement on a subjective scale, in this case the favorable-unfavorable continuum. If the Q value of a statement is large, then the statement is judged to be ambiguous. (Q values are reported in Appendices H and I).

Table 4.6 shows the number of statements with Q values of less than or equal to 1, less than or equal to 1.5, and less than or equal to 2, for both samples.

TABLE 4.6: Number of Statements With Selected Q Values

Q Value	Unadjusted Sample	Adjusted Sample
0 - 1	6	5
0 - 1.5	20	20
0 - 2	49	48

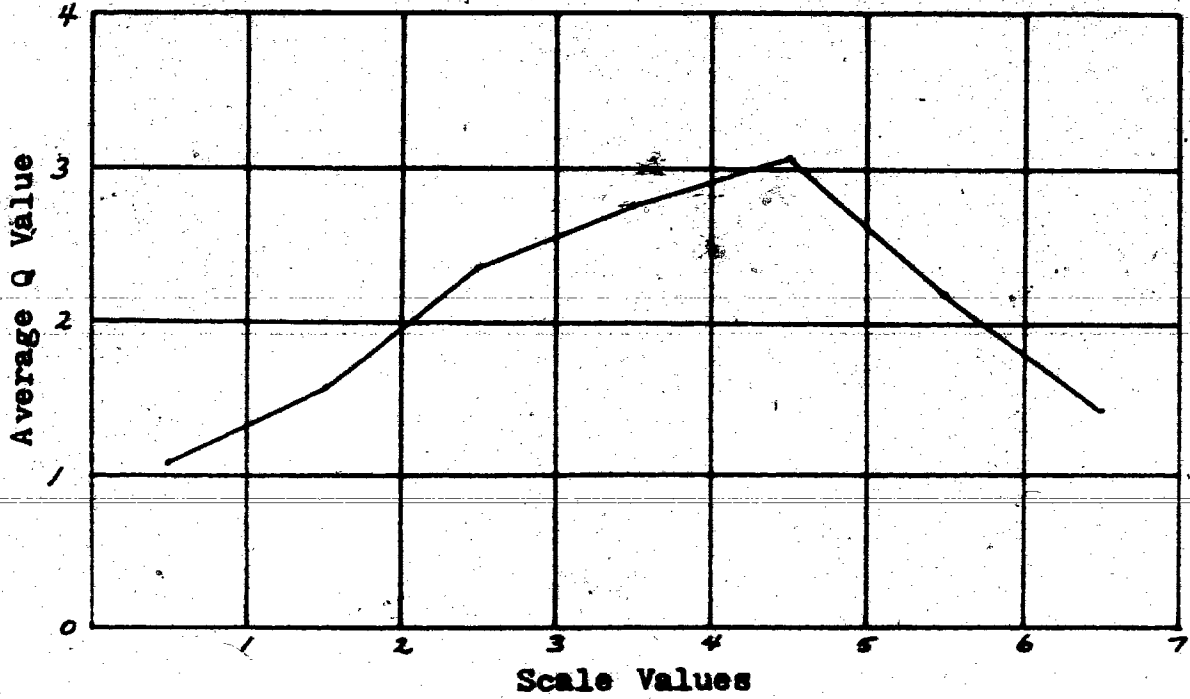
As can be seen from table 4.6, there is very little difference between the two samples in the number of statements with selected Q values. Very few of the statements obtained Q values of less than 1. Twice as many were in the Q range from 1 to 1.5 and twice again as many statements had Q values of 1.5 to 2.0. Q values of greater than 2.0 were calculated for more than half of the statements. The data show that very few statements have acceptable Q values for inclusion in a final instrument.

Variation in Ambiguity Since the Q value is used for eliminating statements, it is also important to know if the average Q value changes for different parts of the scale. To make this relation apparent, average Q values are plotted against scale values. (See Graphs 4.7 and 4.8 on page 93. If all the statements throughout the range are of the same average ambiguity, the line of these graphs would be horizontal and, indeed, the preferred state of affairs. While the graph of average Q values for the adjusted sample is not quite as variable as for the unadjusted sample, there is still a variation in ambiguity with statements in the vicinity of points 3 to 5 having noticeably higher ambiguity than statements at other points. Statements with the lowest ambiguity are those statements scaled at points 0-2 and 6-7.

The data show that statements scaled in the neutral area of the continuum are more ambiguous than statements scaled at the extreme ends. Since statements with high Q values are

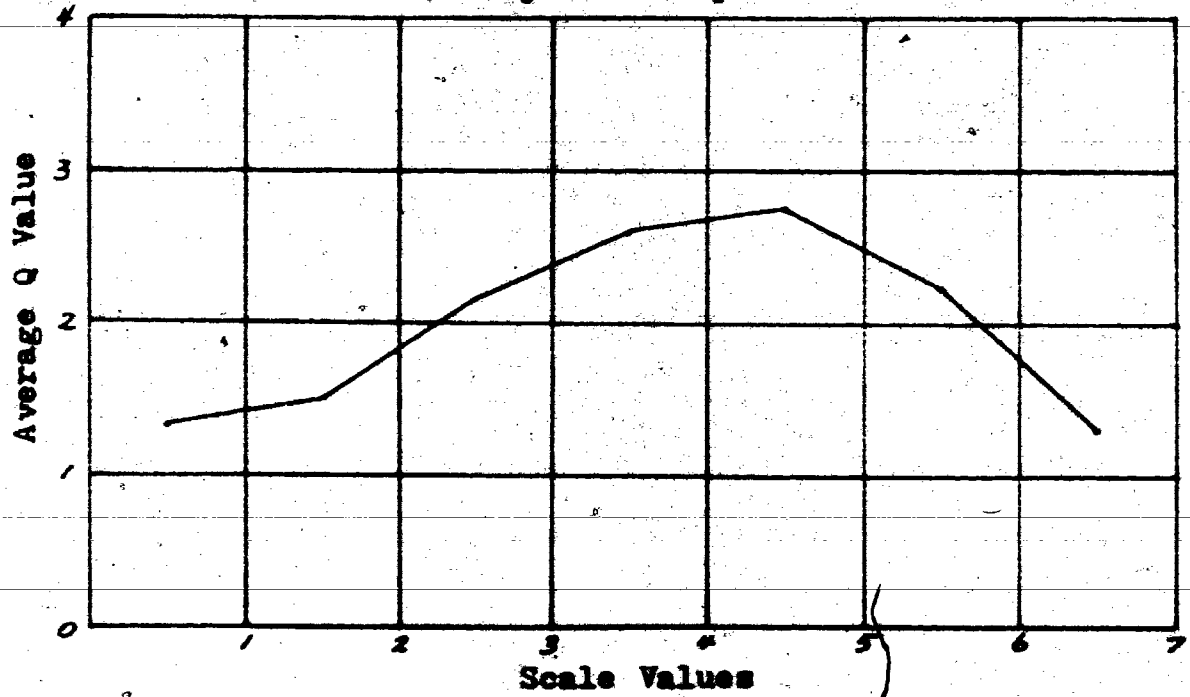
GRAPH 4.7

**Average Q Value Changes Over the Continuum:
The Unadjusted Sample**



GRAPH 4.8

**Average Q Value Changes Over the Continuum:
The Adjusted Sample**



unacceptable for selection for a final instrument, very few (if any) statements with scale values between 3 and 5 could be selected. The data in this study are insufficient to determine whether the Q value does, in fact, reflect ambiguity of statements or whether it reflects rater commitment to particular beliefs.

Unfavorable, Favorable and Neutral Statements of Attitude

Based on scale values, statements representing most unfavorable, most favorable and most neutral attitudes were identified. An attempt was made to select ten statements representative of each of these three attitudes. It was not possible, however, to restrict each category to only ten statements because, for example, three statements with similar scale values might exist to fill the tenth position. In such cases, all statements were identified.

In Tables 4.7-4.9, statements selected by both the unadjusted and adjusted samples are listed along with their scale values and Q values. Asterisks indicate those statements that were selected by both sample groups. (Refer to Appendix E for complete list of statements.)

Most Unfavorable Statements of Attitude In Table 4.7 statements representing most unfavorable attitudes are listed by scale value with statements having the highest scale value at the top. In the unadjusted sample, 12 statements were selected based upon the top six scale values. The two groups identified

TABLE 4.7

Most Unfavorable Statements of Attitude

Unadjusted Sample		
Stmt	S.V.	Q
* 10	6.8	1.25
* 8	6.7	.9
* 6	6.35	1.9
* 54	6.3	1.4
* 59	6.3	.6
* 72	6.3	.7
* 74	6.1	1.8
* 90	6.1	1.6
*101	6.1	1.0
* 19	6	1.6
48	6	2.4
* 73	6	2.0

Adjusted Sample		
Stmt	S.V.	Q
* 59	6.3	.9
* 72	6.3	.8
* 8	6.2	.9
* 10	6.2	1.8
* 54	6.1	1.3
* 90	6.1	1.6
* 6	6	2.1
*101	6	1.1
* 74	5.65	1.9
13	5.6	1.7
* 19	5.6	1.7
24	5.6	1.6
66	5.6	1.6
71	5.6	1.9
* 73	5.6	2.1

* Asterisks indicate those statements selected by both groups.

11 statements in common. All the scale values were lower or the same for the adjusted sample. With the exception of statement No. 54, all Q values were higher for the adjusted sample or the same. It was observed that statements 8, 19, 73 and 74 were ranked in the same position by both groups. That is, No. 8 was ranked second highest, No. 74 fifth, and Nos. 19 and 73 sixth.

Most Favorable Statements of Attitude In Table 4.8

statements representing most favorable attitudes are listed by scale value with statements having the lowest scale value listed first. All statements identified by the unadjusted sample were also identified by the adjusted sample with statement No. 21 being ranked second from the top by both groups. With the exception of statements 52 and 100, all scale values were higher and, with the exception of statements 3 and 100, all Q values were higher or the same in the adjusted sample.

Most Neutral Statements of Attitude In Table 4.9

statements representing most neutral attitudes are listed by scale value with statements closest to the neutral point, point 4, listed first. Of the six statements identified by both groups, with the exception of statement No. 58, all Q values were lower or the same in the adjusted sample. Statement No. 95 was ranked second closest to the neutral point by both groups.

Subjects from the unadjusted and adjusted samples agreed more frequently about statements representative of favorable and unfavorable attitudes than they did about statements

TABLE 4.8

Most Favorable Statements of Attitude

* Unadjusted Sample

Stmt	S.V.	Q
96	.75	1.2
21	.8	1.1
78	.8	1.3
30	.9	1.3
52	.9	1.4
93	.9	1.0
40	1.0	1.2
100	1.05	1.2
3	1.1	1.2
79	1.1	1.15

* Adjusted Sample

Stmt	S.V.	Q
52	.8	1.5
21	.85	1.3
96	.9	1.2
30	1.0	2.0
78	1.0	1.4
100	1.0	1.0
93	1.1	1.0
40	1.2	1.3
3	1.3	1.1
79	1.4	1.3

* Asterisks indicate those statements selected by both groups. The same statements were selected by both groups as representative of Very Favorable Attitudes.

TABLE 4.9

Most Neutral Statements of Attitude

Unadjusted Sample		
Stmt	S.V.	Q
11	4.0	4.1
* 16	4.0	3.8
23	4.0	3.6
* 81	4.0	3.6
86	4.0	3.2
46	3.8	2.4
* 58	4.2	2.0
* 76	3.8	3.0
* 87	4.2	3.8
* 95	4.2	2.2
97	4.2	3.1

Adjusted Sample		
Stmt	S.V.	Q
* 76	4.0	3.0
* 16	4.1	3.5
* 95	4.1	1.9
2	3.8	2.8
26	3.8	2.1
45	3.8	3.3
* 58	4.2	2.2
* 87	3.8	3.55
85	3.75	2.7
* 81	3.7	2.7
94	3.7	3.0

• Asterisks indicate those statements selected by both groups.

representative of a neutral attitudes. Statements identified as representative of favorable and unfavorable attitudes were less extremely scaled by the adjusted sample. That is, similar statements were scaled closer to the midpoint by the adjusted sample than by the unadjusted sample. Also, excluding some subjects generally resulted in higher Q values (greater ambiguity) for statements identified as representative of favorable and unfavorable attitudes. Excluding subjects resulted in lower Q values (less ambiguity) for those statements selected by both groups as reflective of neutral attitudes.

Summary of Findings Generated by Analyses of the Whole Sample

This section reported findings as they related to the three module groups in the sample as a whole. Findings were reported from the following perspectives: a) the frequency with which each point on the continuum was selected for rating the statements, b) the distribution of statements on the continuum as determined by rounded scale values, c) an examination of the ambiguity of statements as determined by their Q values, d) the variation in ambiguity across the continuum, and e) a comparison of statements selected by the unadjusted and adjusted samples as representative of unfavorable, favorable, and neutral attitudes.

These data are inconclusive regarding the desirability of excluding subjects due to extreme preferential rating of statements at a particular point. Q values suggest that most

statements are unacceptable for selection for a final instrument (especially in the neutral zone) because more than half of the statements had Q values of greater than 2.0. In addition, scale values themselves were insufficiently spread across the continuum making the selection of statements representative of points across the continuum impossible.

Analysis and Findings Based on a Comparison of Modules

While the comparison of modules can be legitimately seen as tangentially related to the study, the information from these comparisons was seen to have merit and is therefore included.

Since age, years of post-secondary education and years of previous teaching experience were similar for all subjects, it was conjectured that differences that might exist between groups might be revealed through a comparison of module responses. This section reports findings generated from a) a comparison of point selection percentages by module groups, b) a comparison of group frequency distributions of point selection, c) an analysis of the frequency with which collections of points were selected for rating statements, i.e., rating tendency by 'zone', by each group, d) an analysis of the ranges over which the statements were rated by each group as a measure of discrepancy, e) a comparison of the distribution of statements on the continuum based on rounded means for each group, f) t-tests for each group and g) each group's selection of statements representative of

unfavorable, favorable and neutral attitudes.

A Comparison of Point Selection Percentages The number of statements placed in each envelope (representing each point of the continuum) were recorded for each individual. Then, for each module group, the percentage of statements placed at each point was calculated and graphed. (See Table 4.10 and Graphs 4.9 and 4.10) Differences between the unadjusted and adjusted Early Childhood and Open Education module samples that were observed as a result of this analysis are also discussed. (No subjects were excluded from the Secondary module and, therefore, a discussion of adjusted and unadjusted samples is not relevant.) Since only two individuals from the Secondary module group volunteered to complete the sorting task, this is not seen as sufficient data to extrapolate to that group as a whole. The results of the Secondary group responses are, however, tabulated and discussed to some extent.

To discuss the relationships among the three module groups with respect to frequency distributions it is necessary to look at both the unadjusted and adjusted samples. The Open Education group consistently used each point either more or less frequently than did the other two groups. This was also true for the Secondary group in the unadjusted sample although there was a shift at points 3 and 7 in the adjusted sample. As a result of exclusions, the Early Childhood group rated more statements at point 3 and less at point 7 and the Secondary group fell between

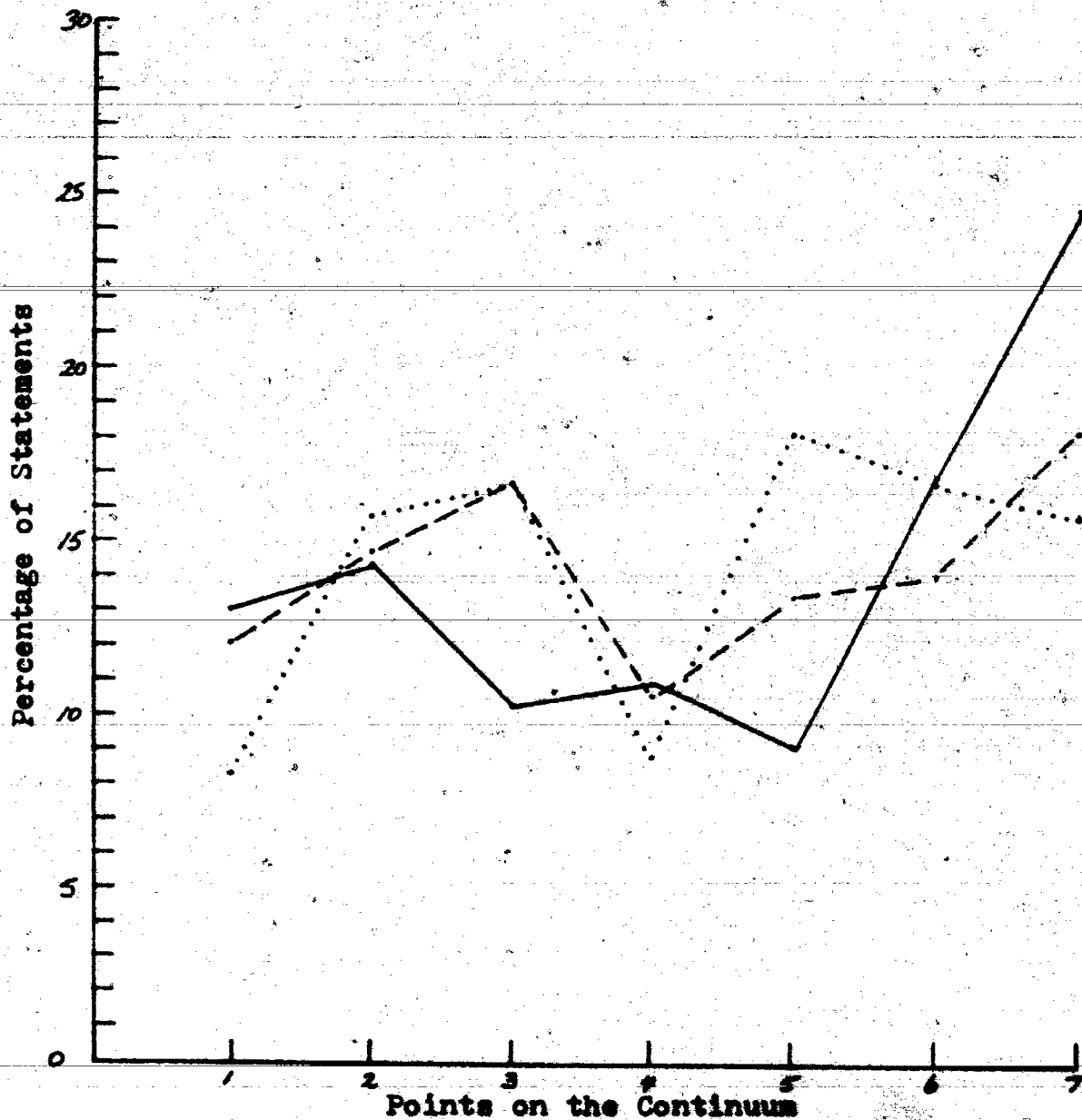
TABLE 4.10

Module Group Comparison of Point Selection Percentages

	Open Education				Early Childhood				Secondary	
	Unadjusted		Adjusted		Unadjusted		Adjusted		No adjust'ts	
	%	Range	%	Range	%	Range	%	Range	%	Range
1	13.1	5.9-17.6	11.8	5.9-16.7	12.1	3.9-24.5	10.4	3.9-18.6	8.3	5.9-10.8
2	14.3	9.8-18.6	14.7	9.8-18.6	14.7	6.9-23.5	15.5	7.8-23.5	15.7	13.7-17.7
3	11.3	4.9-21.6	12.6	4.9-21.6	16.7	9.8-29.4	17.8	9.8-29.4	16.7	15.7-17.6
4	10.9	1.0-21.6	13.4	6.9-21.6	10.6	0-27.5	12.3	2.0-27.5	8.8	6.9-10.8
5	9.1	4.9-16.7	9.6	4.9-16.7	13.4	2.9-26.5	15.1	3.9-26.5	18.1	14.7-21.6
6	16.8	12.7-23.5	17.4	12.7-23.5	14.1	6.9-21.6	14.8	6.9-21.6	16.7	15.7-17.6
7	24.5	5.9-36.3	20.6	5.9-33.3	18.1	2.9-42.2	14.2	2.9-33.3	15.7	14.7-16.7

GRAPH 4.9

Module Comparison of the Distribution of Ratings:
The Unadjusted Sample

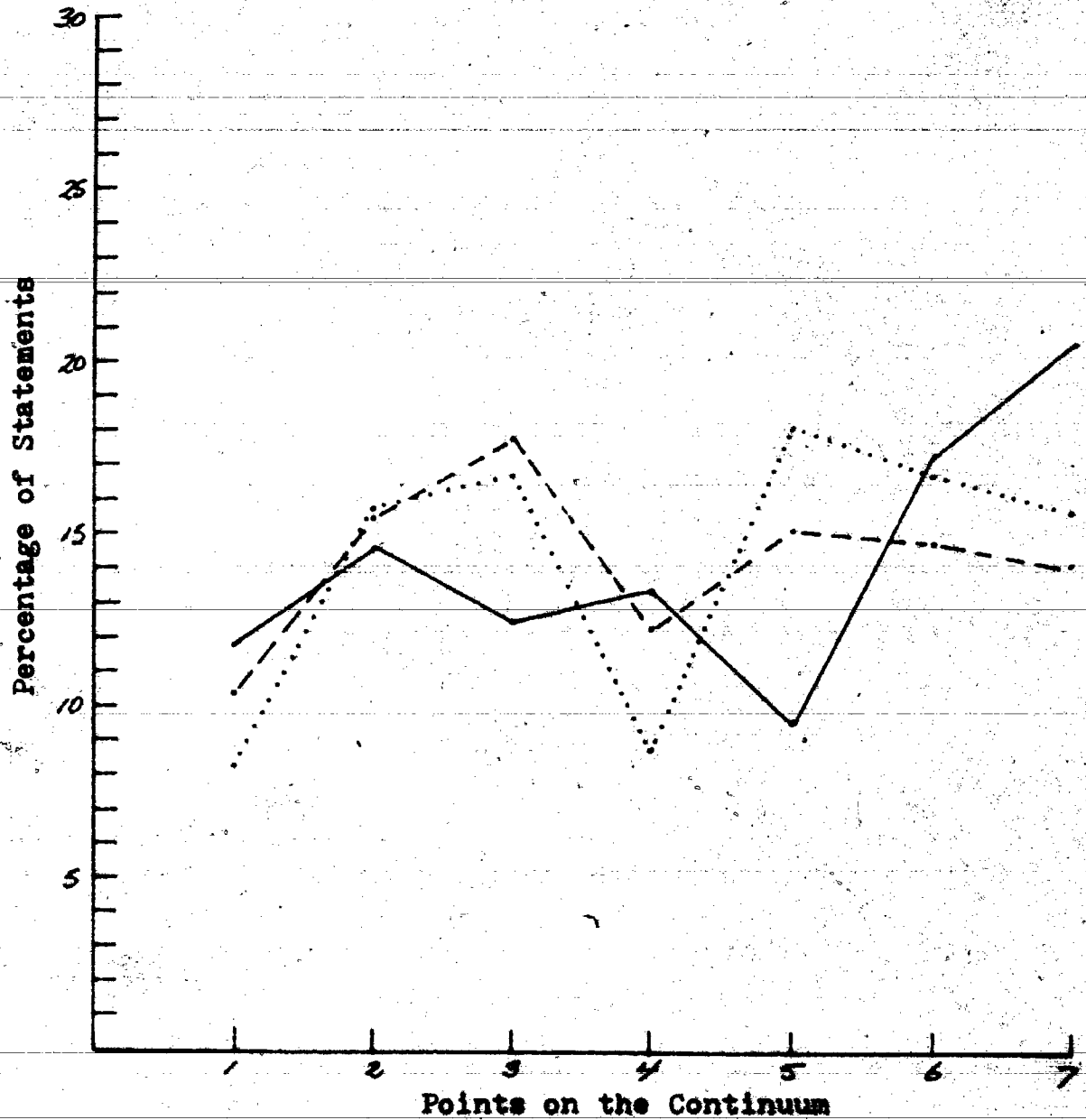


— Open Education n=11

- - - Early Childhood n=19

..... Secondary n=2

GRAPH 4.10
Module Comparison of the Distribution of Ratings:
The Adjusted Sample



— Open Education n=8
 - - - Early Childhood n=16
 Secondary n=2

104

Early Childhood and Open Education groups in the percentage of statements rated at these points.

The data show that excluding subjects for reasons of extreme rating preference did not effect the relationship between the Open Education group and other groups.

Comparison of Frequency Distributions Points 1 and 7 were used less frequently by the adjusted Open Education and Early Childhood samples than by the unadjusted samples and all other points were used more frequently. In terms of the shape of the distributions, the Early Childhood group seemed most effected by exclusions particularly at the unfavorable end of the continuum. One hypothesis for the variation in effect of exclusions, not sufficiently supported by the data, is that individuals choosing the Open Education module group may be clearer about their beliefs and more similar in how they judge belief statements than are individuals choosing the Early Childhood module group.

A Comparison Between Groups of Rating Tendency by Zone In this analysis, the continuum was divided into 'zones' as was done in Phase II (Refer to page 75 for details.) The results are reported in Tables 4.11 to 4.13.

To determine whether groups tended to rate statements as favorable or unfavorable more frequently, the continuum was divided into three zones: the favorable zone represented by all points to the left of neutral (Points 1-3), the unfavorable zone

TABLE 4.11

TABLE 4.11: A Comparison Between Groups of Rating Tendency by Zone: Analysis 1

Group Description	Favorable % (1-3)		Neutral % (4)		Unfavorable % (5-7)	
	Unadj'd	Adj'd	Unadj'd	Adj'd	Unadj'd	Adj'd
Open Education	38.8	39.1	10.9	13.4	50.4	47.5
Early Childhood	43.4	43.6	10.6	12.3	45.9	44.1
Secondary	40.7	40.7	8.8	8.8	50.5	50.5
Total	41.7	42.0	10.6	12.3	47.7	45.7

TABLE 4.12

TABLE 4.12: A Comparison Between Groups of Rating Tendency by Zone: Analysis 2

Group Description	Favorable % (1-2)		Neutral % (3-5)		Unfavorable % (6-7)	
	Unadj'd	Adj'd	Unadj'd	Adj'd	Unadj'd	Adj'd
Open Education	27.5	26.5	31.3	35.5	41.3	38.0
Early Childhood	26.7	25.9	41.0	45.1	32.2	29.0
Secondary	24.0	24.0	43.6	43.6	32.4	32.4
Total	26.8	25.9	37.8	42.0	35.4	32.1

TABLE 4.13

TABLE 4.13: A Comparison Between Groups of Rating Tendency by Zone: Analysis 3

Group Description	Favorable % (1-3)		Neutral % (3-5)		Unfavorable % (5-7)	
	Unadj'd	Adj'd	Unadj'd	Adj'd	Unadj'd	Adj'd
Open Education	38.8	39.1	31.3	35.5	50.4	47.5
Early Childhood	43.4	43.6	41.0	45.1	45.9	44.1
Secondary	40.7	40.7	43.6	43.6	50.5	50.5
Total	41.7	42.0	37.8	42.0	47.7	45.7

represented by all points right of neutral (Points 5-7), and the neutral point (Point 4). All groups tended to rate statements in the unfavorable zone more often than they would rate them in the favorable zone. These data suggest that either individuals tend to rate statements as unfavorable more often than they would rate them as favorable, or that the collection of statements were more generally representative of unfavorable attitudes than they were representative of favorable attitudes.

In a second analysis, the continuum was broken into three other zones defined as follows: Favorable (Points 1-2), Neutral (Points 3-5), and Unfavorable (Points 6-7). This was done to determine the tendency of individuals to rate statements at extreme points of the continuum versus rating them in the more neutral zone. The data suggest that all groups select favorable points for rating less frequently than other points. While in this analysis the neutral zone is larger than the other two zones and one might expect points in the neutral zone to be selected more frequently, individuals in the Open Education group still tended to rate most statements as representative of unfavorable attitudes. Early Childhood and Secondary groups rate statements as reflective of a neutral attitude more frequently. Excluding subjects had no effect on the relative number of statements selected for each zone.

A third analysis was done dividing the continuum into three equal zones (and thus there is point overlap between zones): Favorable (Points 1-3), Neutral (Points 3-5), and Unfavorable

(Points 5-7). In this discussion of differences between groups it is again necessary to look at both the unadjusted and adjusted samples because the exclusion of subjects did effect group rating tendency.

The Open Education group still rated most statements as unfavorable and the least number of statements as neutral representations of attitude. For the Early Childhood group however, the relative frequency with which statements were selected in each zone changed as a result of exclusions. The unadjusted sample distributed statements similarly to the Open Education group. The adjusted Early Childhood group tended to place statements almost equally in each of the three zones.

These data suggest that excluding subjects from the Open Education group due to extreme preferential rating of statements at a particular point may be unnecessary. In the Early Childhood group, however, excluding subjects for this reason appeared to have an effect. Whether this is due to differences in rating tendency between groups, to differences in interpretation between groups or to the possibility that the Early Childhood group includes individuals that would be more representative of the Open Education group, cannot be determined from the data.

Since there were only two subjects in the Secondary module group and since no exclusions were made, it is not possible to make any thoughtful comment on the data collected from this group. In all further comparisons, only the Open Education and Early Childhood module groups are considered.

Comparison of Rating Range The range over which each statement was rated is taken as an indicator of discrepancy within each group. In order to determine a) the differences in discrepancy between groups, and b) discrepancy shifts as a result of excluding subjects, the range over which each statement was rated was investigated and the two module groups, Early Childhood and Open Education, were compared.

Individuals within the Early Childhood group were found to vary in their ratings much more than individuals in the Open Education group. That is, the range over which statements were rated was greater for the Early Childhood group. For statements 2, 30, 38, 52, 90, 92 and 93, the Open Education group did vary more than the Early Childhood group. In examining scale and Q values for these statements, no pattern was discerned. Individuals remaining in both groups after exclusions tended to be closer in their ratings than the unadjusted samples.

Three statements, 62, 66 and 88, were rated over a broader range by the unadjusted Open Education group but did not appear as more variable in the adjusted sample. (In the adjusted sample, variability in ratings of statements 62 and 66 decreased to the point that they were rated over the same range by both groups. Ratings by the Open Education group for statement 88 were less variable than they had been originally and covered a smaller range than the ratings of the adjusted Early Childhood group.)

In the adjusted sample, six statements, 17, 26, 27, 84, 85 and 87, were rated over a broader range by the Open Education group than by the Early Childhood group. The range over which the Open Education group rated four of these statements was the same in unadjusted and adjusted samples but there was a decrease in the range over which the adjusted Early Childhood group rated them. While the range over which statements 26 and 84 were rated decreased in both adjusted groups, it decreased more in the Early Childhood group. These data suggest that individuals in the Early Childhood group may vary more in their ratings or in their interpretation of statements than the individuals within the Open Education group. The data also suggest that, for this sample, excluding subjects does slightly reduce discrepancy in ratings of each group.

Comparison of the Distribution of Means Rounded means were used instead of scale values in this comparison because of the time and labor involved in calculating scale values. The assumption was made that differences between groups would be reflected as much by mean responses as by scale values. Because the distribution of responses is quite skewed, the mean is not taken as an indicator of attitude; it is used here only as a rough measure to explore the similarities and differences between the Early Childhood and Open Education module groups.

The rounded mean response for each statement for each of the Open Education and Early Childhood module groups was

calculated. This was done for both the unadjusted and the adjusted samples. For example, for statement No. 1, the mean response for the Open Education group was 5.727; for the Early Childhood group it was 3.474. These were rounded to 6 and 3 respectively. The distribution of these means across the continuum was then graphed. (See Graphs 4.11 and 4.12)

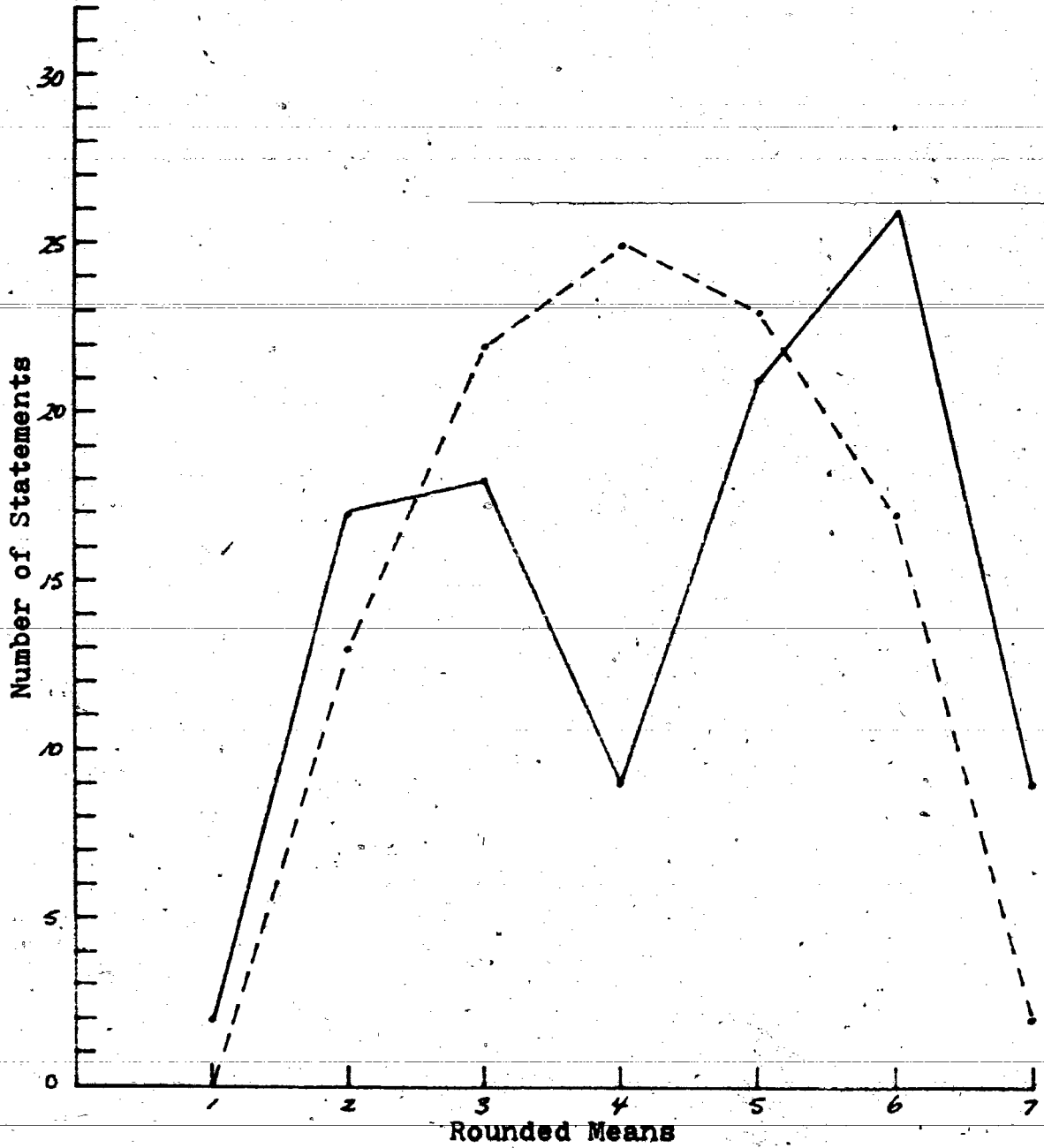
In the unadjusted sample, the curve of the graph of the Early Childhood group appears as a "normal distribution" with subjects placing very few statements in the extreme ends of the continuum and most of the statements in the neutral area. Contrarily, the Open Education module group placed more statements in the extreme zones than in the neutral zone.

After eliminating six subjects (three from each group) based on the exclusion criteria described in Chapter 3, page 57, the number of statements placed at the neutral point, point 4, increased for both groups. Very little change occurred in the distribution of statements at other points except for the number of statements placed at point 6 by the Open Education group. (There was an 8 statement decrease.) This analysis suggests that individuals in the Early Childhood group rate/perceive statements as neutral more than individuals in the Open Education group.

Group Comparison of t-tests The t-values were calculated to determine the degree to which there was a significant difference between Early Childhood and Open Education mean

GRAPH 4.11

Comparison of Open Education and Early Childhood
in the Distribution of Statements Based on Rounded Means:
The Unadjusted Sample

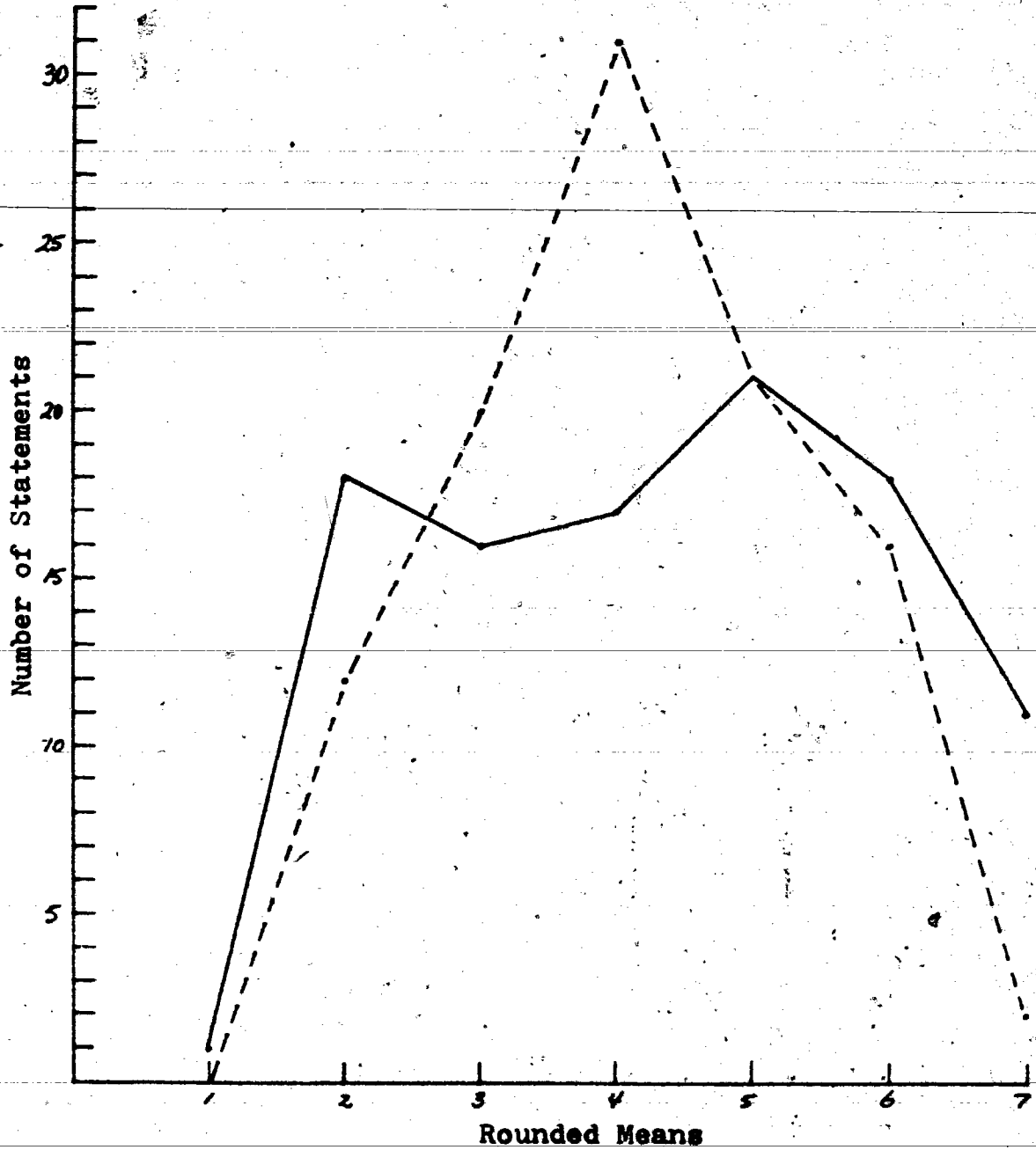


— Open Education n=11

- - - Early Childhood n=19

GRAPH 4.12

Comparison of Open Education and Early Childhood
in the Distribution of Statements Based on Rounded Means:
The Adjusted Sample



— Open Education n=8

- - - Early Childhood n=16

TABLE 4.14

TABLE 4.14: A List of Statements for which there was No Significant Difference Between the Means of Open Education and Early Childhood Groups

Statement	SV	Q	%
6. Subjects are best taught separate from one another.	6.0	2.1	92.4
10. Teachers must sometimes make criticisms of a student's work without considering how the student might feel about it.	6.2	1.8	100.0
13. Frequently a teacher must be inflexible.	5.6	1.7	91.1
16. Failing or holding back a student is a practise that should be discontinued.	4.1	3.5	100.0
34. Some students don't want to learn.	4.3	3.3	100.0
46. Teachers should determine working partners for group work.	3.5	2.2	91.9
66. Students who will not do their work must be punished.	5.6	1.6	100.0
93. It is more important for a teacher to ask questions that require original thinking than questions that require information recall.	1.1	2.0	100.0
98. Allowing students to decide what they want to do tends to result in disorganized classrooms.	4.6	2.9	92.9

responses for each statement. Of the 102 statements, no difference was found for only nine of the statements. Table 4.14 shows the statements, scale values, Q values and the confidence interval within which there is no significant difference between the means of the two groups. These data suggest that there is a difference in rating tendency (or statement interpretation) between the two groups and, therefore, the homogeneity of the sample as a whole is questioned.

Group Comparison of Statements Representative of Unfavorable, Favorable and Neutral Attitudes Using the procedures described on page 94, accumulative frequency distributions were also drawn for the unadjusted Open Education and Early Childhood groups (See Appendix L). The findings discussed here are based on approximate scale values obtained.

Based on approximate scale values, statements representing most unfavorable, most favorable and most neutral attitudes were selected. An attempt was made to identify ten statements representative of each of these three attitudes. It was not possible, however, to restrict each category to only 10 statements when more than one statement was found with the scale value required for the tenth position. In such cases, all statements were included.

In Tables 4.15-4.17, statements identified by the Open Education and Early Childhood module groups are listed along with their approximate scale values. Asterisks indicate those

A Comparison of Open Education and Early Childhood Groups
 In the Selection of Most Unfavorable Statements of Attitude (Table 4.15),
 Most Favorable Statements of Attitude (Table 4.16) and Most Neutral Statements
 of Attitude (Table 4.17)

TABLE 4.15

Unfavorable			
OEA		ECE	
Stmt	SV	Stmt	SV
* 8	6.8	* 72	6.6
* 72	6.6	10	6.5
73	6.5	59	6.5
* 74	6.5	* 8	6.4
*101	6.4	* 6	6.2
* 6	6.3	54	6.2
19	6.3	48	6.1
32	6.3	*101	6.1
33	6.3	66	5.8
71	6.3	* 74	5.8
		75	5.8

TABLE 4.16

Favorable			
OEA		ECE	
Stmt	SV	Stmt	SV
22	.3	* 30	.7
12	.4	78	.7
*21	.6	* 21	1.1
*30	.6	* 79	1.1
*79	.6	100	1.1
*93	.6	* 40	1.2
*96	.6	* 93	1.2
35	.7	* 96	1.2
*40	.7	* 52	1.3
*52	.7	3	1.4

TABLE 4.17

Neutral			
OEA		ECE	
Stmt	SV	Stmt	SV
95	3.8	16	3.9
7	4.3	26	3.9
23	3.7	45	3.9
28	4.3	56	4.2
46	4.3	* 58	3.8
60	4.3	76	4.2
65	3.7	85	3.8
77	3.7	29	4.3
* 87	4.3	37	3.7
53	3.6	87	4.3
* 58	4.4		

* Asterisks indicate those statements selected by both groups.

OEA = Open Education

ECE = Early Childhood

statements identified by both groups.

Most Unfavorable Statements of Attitude In Table 4.15 statements representing the most unfavorable attitudes are listed by approximate scale value with statements having the highest scale values closest to the top. Five statements were selected by both groups: Nos. 6, 8, 72, 74 and 101. Scale values indicated that the Early Childhood group tended to rate statements less extremely and over a broader range than did the Open Education group. (Early Childhood: 5.8 - 6.6; Open Education: 6.3 - 6.8)

Most Favorable Statements of Attitude Table 4.16 lists statements and scale values representative of favorable attitudes. Statements with the lowest scale values are listed first. The Open Education and Early Childhood groups identified seven of the same statements as indicative of very favorable attitudes. Again, the Early Childhood group tended to rate statements less extremely and over a broader range than did the Open Education group. (Early Childhood: .7 - 1.4; Open Education: .3 - .7)

Most Neutral Statements of Attitude In Table 4.17, statements are listed by scale value with statements closest to the neutral point, point 4, listed first. The groups only selected two of the same statements as most indicative of a neutral attitude. Scale values indicated that the Open Education group's selection of most neutral statements spanned a slightly broader range (3.8 - 4.4) than did the statements selected by

the Early Childhood group (3.9 - 4.3).

To summarize, statements were selected based on approximate scale value, as most representative of unfavorable, favorable and neutral attitudes. Open Education and Early Childhood groups agreed more frequently about statements indicative of most favorable attitudes and least frequently about statements indicative of most neutral attitudes. Scale values of favorable and unfavorable statements selected by the Early Childhood group were less extreme and covered a broader range than did the scale values of statements selected by the Open Education groups as representative of the same attitudes. Scale values of neutral statements identified by the Open Education group covered a slightly broader range of the continuum than did the scale values of neutral statements identified by the Early Childhood module group.

These data suggest that a) the two groups tend to agree more about statements rated in extreme zones, b) there is more confusion about what constitutes a neutral attitude, and c) there is greater discrepancy within the Early Childhood group in the ratings of favorable and unfavorable statements of attitude, and greater discrepancy within the Open Education module group in the ratings of neutral statements of attitude. The data also suggest that the only support for the exclusion premise is the slight resulting decrease in discrepancy in ratings within groups. (This is indicated by the decrease in the range of responses in scaling a particular statement.)

Chapter Summary

This chapter reported the findings generated from an analysis of data collected in each of the three phases of the study, each phase addressing one or more requirements identified as inherent in the development of a scale of attitudes toward teaching and learning. Findings from the collection of statements and from the distribution of an open-ended questionnaire were reported as part of Phase I. (See page 61) Findings from Phase II as a result of subject sorting of 214 statements on a 9 point open-closed continuum were reported. (Page 73) Findings from Phase III of the study coming from subject sorting of 102 statements on a 7 point favorable-unfavorable continuum were also reported. (See page 80)

CHAPTER V

SUMMARY, CONCLUSIONS, IMPLICATIONS, AND IMPLICATIONS FOR FURTHER STUDY

Summary

Business, government, industry and the professions recognize the increasing importance of understanding attitudes of individuals and groups and attitude research techniques are being employed to increase their understanding. Educators, faced with parent, administrator, colleague and student attitudes, are looking for ways to understand and deal with the various attitudes they encounter. They are using attitude and opinion measurement techniques for diagnostic purposes, for determining attitude patterns, for providing information about possible future attitudes and behaviors, for improving relationships and as guides in selection procedures. Since the Professional Development Program at Simon Fraser University is concerned with the training of teachers and might benefit from an attitude measuring technique or instrument which would serve these ends, a study exploring a) attitudes toward teaching and learning and b) the possibility of designing an instrument, was undertaken.

Initially a study was undertaken to determine the kinds of beliefs being expressed about teaching and learning. The study led to the collection of a number of statements representing a variety of beliefs about teaching and learning.

A total of 68 pre-service teachers were studied using a sorting procedure for a collection of statements, and the results were tabulated and compared for the sub-groups of the sample. On the basis of these data a number of findings were reported. This chapter discusses the conclusions resulting from the findings, their implications, and suggests directions for future study.

Conclusions

The purpose of this study was to explore the possibility of developing a scale of attitudes toward teaching and learning, which might be useful in the training of pre-service teacher education students. This study demonstrated that it is not possible to develop such an instrument using the Thurstone techniques and, in fact, suggests that one cannot assume that a given statement of belief will be understood in the same way by more than one person. Statements of belief are seen as expressions of attitude but statements may not be relevant to or measureable by, all, or even many people in the same ways.

Implications

The literature and research reviewed supported one assumption of this study, that attitudes can be measured. This study does not support that assumption nor were the other assumptions (that there is validity to Thurstone's method of scale development, that subjects can be reasonably expected to tell the truth about their opinions and that a scale administered to the appropriate population would provide information about group differences) supported.

Excluding subjects resulted in very little difference in the distribution of ratings, the distribution only being particularly different at Point 7 where the majority of statements were rated by excluded subjects. There was also a lot of agreement between unadjusted and adjusted samples in the selections of most favorable and most unfavorable statements. In addition, the measures of ambiguity of statements scaled at each end of the continuum tended to increase as a result of excluding subjects. However, the average ambiguity of statements scaled at points 2-5 decreased, as did the discrepancy between ratings within the adjusted group.

The Q value as a measure of ambiguity is an integral part of scale development by Thurstone's method. Yet, as a result of this study, the investigator questions the notion that Q values actually measure statement ambiguity. Statements at the extreme ends of the continuum tended to have lower ambiguity measures

than at other points and there was also more agreement among individuals about statements that reflected more favorable and more unfavorable attitudes. Are statements rated in the extreme ends of the continuum actually less ambiguous in themselves, or are individuals clearer about attitudes reflected in more extreme beliefs? Are statements rated in the neutral area of the continuum actually more ambiguous? That is, does the Q value measure statement ambiguity or lack of clarity in the rater's mind? It is suggested that, while Q values may be useful in providing information, and may even indicate statement ambiguity at the extreme ends of the continuum, other means of identifying ambiguous statements for exclusion from a final scale are required.

While the comparison of module groups was only tangentially related to the study, its undertaking did prove of interest. At no point in the study, not with the whole group or its sub-groups, was it discovered whether differences in the rating of statements were due to differences in rating tendency or due to differences in rater interpretation of statements or due to some other reasons. What is suggested is that individual choice of program may give an indication of the degree to which individuals choosing a particular program share similar attitudes. Although the module samples for study were small, the data suggest that individuals choosing different programs may vary greatly in attitude.

Implications for Further Study

While there are instruments purporting to measure attitude, this study suggests that attitudes are not amenable to measurement by these means. The measurement instruments are too gross to measure such a complex, multifaceted, shifting concept such as attitude. The quest for developing an instrument to measure attitudes may ultimately be successful but, as yet, the quest has only begun. Any use of attitude instruments must be careful and with full awareness of their limitations.

Assumptions made in beginning a study, seemingly reasonable assumptions, are now left as questions requiring further study. For example, is it appropriate to exclude subjects for the seemingly appropriate reason of extreme preferential rating? What justifications are there for excluding subjects? Are Q values potential indicators of something other than statement ambiguity? How can ambiguous statements be identified? What assumptions are made in undertaking the development of an attitudinal scale? To what extent are these assumptions reasonable? How can rater tendency be separated from rater interpretation of statements? And, ultimately, how can attitude be measured? Further studies investigating these questions are warranted in the quest for an effective instrument to measure attitudes toward teaching and learning.

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APPENDICES

APPENDIX A

**Copy of Open-ended Questionnaire and
Request for Information**

TO FACULTY, STAFF AND STUDENTS

I am attempting to design a scale to look at beliefs about teaching and learning and your help would be appreciated.

Attached is a list of open-ended statements which I would like you to complete in whatever way most accurately reflects your beliefs. In completing these statements (and adding any comments you would like), you will help me to get an idea of the nature and range of beliefs that people hold about education. In providing some personal information you will also help me to determine the extent to which belief statements may be generalized.

I would appreciate the return of these responses by October 16 if at all possible. The forms can be placed in the envelopes provided by your mailbox.

Thank you in advance for your time in providing responses to these statements.

Fiona Crofton
Graduate Student

P.S. If you feel you really don't have the time to respond to the statements, please return blank forms as well; this will help me cut down on costs. Thanks.

FACULTY: DEPT: _____

PROFESSOR _____ ASST. PROFESSOR _____ ASSOCIATE _____

OTHER _____ (Please describe)

STUDENTS: GRADUATE _____ UNDERGRADUATE _____ DEPT. _____

TEACHING EXPERIENCE: NO _____ YES _____ YEARS _____ MONTHS

AGE LEVEL _____ GRADE LEVEL _____ SPECIALTY (if any) _____

Please complete the following statements in whatever way most accurately reflects your beliefs. If you require more room than is provided, please use the back of the page and/or attach an additional page.

1. Teaching is
2. Learning is
3. A closed system of education
4. An open system of education
5. The most important objective in education is
6. Grading is
7. A teacher's most important job is to
8. The best students are

9. The worst students are
10. A teacher is doing a great job when
11. A teacher is doing a poor job when
12. Children's capabilities
13. Children's difficulties
14. The best way to deal with behavioral problems
15. Most students
16. Learning things is hard if
17. Students really appreciate it when teacher
18. Students really hate it when teachers
19. Parents expect schools to
20. Society expects schools to

APPENDIX B

List of Item Sources

1. Profiles of Teaching Competency
2. Journal of Research in Science Teaching, Volume 16,
#3, pages 269-274
3. C-1 Selma Wassermann
4. Shaw and Wright:
 - Exhibit 3-4: Attitude Toward the Freedom of Children
 - Exhibit 3-7: Attitude Toward the Use of Fear as a Means
of Controlling Children
 - Exhibit 3-14: Attitude Toward Education
 - Exhibit 3-15: Opinionnaire on Attitude Toward Education
 - Exhibit 3-16: Education Scale
5. P.C.I.
6. Education Scale VII - Hromyk
7. Open-ended Questionnaire - F. Crofton
8. Proposition about Reading Instruction
9. Unpacking Personal Meaning Systems - M. McLaren

APPENDIX C

Samples of Responses to the Open-ended Questionnaire

TEACHING IS . . .

Faculty Responses

1. arranging features of the environment to increase the probability that students will engage in thinking/behaving activities which I believe will promote learning.
2. an art, a joy, a sharing, a process of continuous learning and changing and caring.
3. rewarding.
4. the art of communicating one's knowledge and experience to other people.
5. successful only when the learner has been enabled by the process.
6. causing another to learn.
7. the management of learning.

Faculty Associate Responses

8. creating situations, providing for experiences, sharing ideas, encouraging independence, promoting and encouraging thinking, actively encouraging problem-solving.
9. rewarding.
10. the most complex of arts.
11. presenting children/adults with experiences which will encourage them to think and to question.
12. probably the most demanding profession of all.
13. an art form.
14. part of one's duty as a bearer of one's culture and civilization.

Coordinator Responses

15. helping, facilitating kids learning, creating with kids meaningful environments.

16. finding ways to help others learn.
17. a wonderful way to learn and grow while helping others do the same.
18. an art form. Special skills, abilities, values and knowledge characterize the master teacher. However mastery only comes when the the pursuit of quality of these characteristics is reflected in the understanding of the learner's needs and perceptions.

Sessional Instructor Responses

19. self conscious transmission of knowledge.
20. passing on your knowledge.

Graduate Student Responses

21. demanding.
22. satisfying.
23. sometimes quite confusing.
24. challenging.
25. the art of passing knowledge to others; the introduction of people to new ideas.
26. a pleasure 90% of the time.
27. conveying information.
28. a special form of communication possessed by few; facilitating learning; preparing the way for people to want to know.

LEARNING IS . . .

Faculty Responses

1. a change in students' cognitive structure that I can see/know about only if I get them to behave.
2. an art, a joy, a sharing, a process of continuous teaching and growing and caring.
3. powerful; exciting.

4. the process by which one goes from one stage to another.
5. something the learner must do for himself. No one can do it for him.
6. changing behavior.
7. a change in behavior (excepting: maturational, fatigue, sensory-reflex, drug-related modifications.)

Faculty Associate Responses

8. experiencing, using "feedback," attempting, questioning, sharing, responsible for own behavior.
9. challenging.
10. a lifelong process.
11. experiencing new ideas, new theories, new facts, and analyzing them and filing them in the brain according to their topic/theme of importance to you.
12. facilitated by competent/creative/open-minded teachers.
13. an externalized change brought about by responding to one's environment.
14. sometimes difficult, but always rewarding.

Coordinator Responses

15. discovering the power, autonomy of knowledge; making decisions, becoming self-directed.
16. encountering new skills or ideas, practising or analyzing them, incorporating them into your belief structure.
17. a life-long process, best achieved where peoples' interests, emotions, physical beings, dreams, fantasies, values and goals can all be drawn upon.
18. inherent in all teaching activities. The best learning occurs when the learner perceives a value, a motivation or intrinsic desire to understand, which in turn may be facilitated or taught by a teacher. Self-direction requires verbal or interpersonal support by another learner or teacher.

Sessional Instructor Responses

19. acquisition of knowledge.
20. acquiring new knowledge.

Graduate Student Responses

21. sometimes painfully slow.
22. hard work.
23. basic to human growth.
24. rewarding.
25. the accumulation of useful knowledge.
26. difficult when you're not interested in the subject.
27. digesting information.
28. for most people, soaking up information like a sponge and regurgitating when required.

A CLOSED SYSTEM OF EDUCATION . . .

Faculty Responses

1. is one where the teacher is less able to manipulate features of the instructional environment in attempts to promote learning, either because of external constraints (e.g., imposed curriculum) or teacher's lack of knowledge or ability.
2. is dangerous; too common in the secondary system; is product oriented; has all the answers.
3. is what we mostly have everywhere.
4. has no place in today's world.
5. stifles the hearts and minds of learners and teachers alike. It reduces choice and emphasizes mediocrity.

6. provides limited access.
7. can run parallel and independent of student needs.

Faculty Associate Responses

8. does not provide a setting for (See Teaching is and Learning is); has pre-determined objectives; values knowledge; views students as receivers.
9. stifles.
10. restricts the teachers and learners alike.
11. is one where the curriculum is set and the personnel are dedicated to transferring the knowledge from themselves to the students.
12. is reflective of societal attitudes.
13. shuts a child's natural risk-taking responses and minimizes his/her learning.
14. ?

Coordinator Responses

15. is one that gives/provides the rules, content, structure, path of education.
16. ?
17. sounds repressive - the opposite of open, organic, alive, and caring.
18. prevents teaching to become an art form and learning from being self-directed.

Sessional Instructor Responses

19. is the present system.
20. is one where methods and content changes very little as years go by.

Graduate Student Responses

21. has a pre-determined curriculum.
22. -

23. is centralized; bureaucratic.
24. is sometimes good.
25. is one with specified objectives, e.g., the university degree program.
26. causes the public to feel the schools are hiding something.
- 27.
28. -

AN OPEN SYSTEM OF EDUCATION . . .

Faculty Responses

1. is one where the teacher is more able to manipulate features of the instructional environment in attempts to promote learning.
2. is flexible. It allows many possibilities. The emphasis is on the learning process.
3. is a dream realisable only by a very few.
4. should reflect a more human and open approach towards the world.
5. promotes more freedom of choice, requires thinking and acceptance of responsibility and is more scary to a lot of people.
6. provides open access.
7. admits students to decision-making about their treatment.

Faculty Associate Responses

8. respects the student; recognizes and accepts students as they are; has few established views on what students should become, what students should know, what students should believe and what students should think.
9. enriches.
10. creates more challenges for teachers and pupils.

11. is one where there is time to think, question, analyze, laugh, cry, daydream; is one where you have choices.
12. is desirable.
13. opens up the opportunities for a child's risk-taking; maximizes his/her learning.
14. ?

Coordinator Responses

15. is one that creates an environment for kids to learn, discover, create, think, act autonomously.
16. would encompass a wider variety of possibilities.
17. sounds like sunshine, growth, love, delight, working together - probably involves food at some point too.
18. ensures both learner and teacher realize their potential for pursuing their goals without inhibition and through ongoing positive support both academically and organizationally.

Sessional Instructor Responses

19. is nonexistent in the public system.
20. is one where new ideas about all aspects of education can be expressed and where there is hope for them to be put to use.

Graduate Student Responses

21. centers around the students' needs.
22. -
23. community centered; evolving.
24. is sometimes good.
25. is one in which the learner is encourage to explore areas of interest.
26. can be valuable for all participants.
- 27.
28. -

THE MOST IMPORTANT OBJECTIVE IN EDUCATION IS . . .

Faculty Responses

1. to provide general knowledge, skills and attitudes that have transfer value.
2. to have those involved perceive themselves in positive ways.
3. meeting the various needs of students.
4. the development of the human being as a whole.
5. to enable learners to undertake the rigorous task of life-long learning. This is not easy.
6. to foster the fundamental motives toward competence.
7. to promote the productivity of each individual.

Faculty Associate Responses

8. to unconditionally accept the student so he/she is able to become, know, believe, think.
9. meeting the needs of the individual child.
10. to learn as many ways to learn as possible.
11. to encourage the learner to think.
12. to teach people to think and be responsible for their own learning.
13. to recognize the fragility of a child's mind and to create an environment for that mind to be stimulated.
14. to produce individuals who have a sense of self worth and a sense of service to the community.

Coordinator Responses

15. to help kids to become autonomous, thinking, concerned, caring humans.
16. to maintain the needs and rights of the learner; not necessarily to maintain the system.

17. to enable people to enrich their lives and the lives of others.
18. to set attainable goals that enrich the spirit for further learning.

Sessional Instructor Responses

19. giving the learner power in his/her universe.
20. transmitting knowledge.

Graduate Student Responses

21. to help students to continue with self-education.
22. educating scientists.
23. allowing students the opportunity to respond critically and rationally.
24. to raise dignity of human beings.
25. that people should learn.
26. to "hook" children on the pleasure of learning.
27. to promote the ability to learn.
28. to allow someone to develop to his/her maximum potential, physically, mentally, emotionally and socially.

GRADING IS . . .

Faculty Responses

1. first, a means for providing informational feedback to promote learning, second, a way of communicating students' accomplishment to them and others.
2. too often a dangerous weapon used by teachers.
3. hurtful and in the end mostly of negative result.
4. an artificial necessity imposed by our society.
5. a system of assigning quantitative rankings as a measure of learning. Those who believe that they system has validity are either naive or stupid.

6. a useful means of providing feedback to all concerned if wisely handled.
7. a bore; time-consuming; heart-breaking; positively reinforcing; esteem-shattering; necessary?!

Faculty Associate Responses

8. non-productive.
9. harmful.
10. not essential.
11. encourages competition; has its place when used with care along with others systems of evaluation.
12. necessary and difficulty.
13. part of the competitive system of our society and is detrimental to growth in terms of risk-taking.
14. tedious.

Coordinator Responses

15. a value judgement.
16. contradictory to self-initiated and independent learning.
17. unnecessary, unfair, irrelevant, destructive, misleading, and political . . .
18. only relevant if it is self-assessment.

Sessional Instructor Responses

19. a potentially helpful tool.
20. assessing how much of the knowledge to be passed on actually passed on.

Graduate Student Responses

21. degrading.
22. required.
23. abused.
24. sometimes essential.

25. subjective and arbitrary assignment of results in terms of objectives as perceived by a teacher/professor.
26. often a negative experience for children.
27. useful.
28. regarded as necessary; difficult.

A TEACHER'S MOST IMPORTANT JOB IS TO . . .

Faculty Responses

1. promote learning.
2. help the student become independent and skillful in his own interactions and learning.
3. grow people.
4. communicate his/her love to the students for the purpose of becoming a well-balanced and developed human being.
5. enable each learner just a little bit more.
6. develop foundational skills for future use.
7. provide a safe environment for learning.

Faculty Associate Responses

8. be "open" to spontaneous happenings.
9. encourage, support and guide.
10. provide optimum learning situations for students.
11. provide experiences and a positive atmosphere.
12. be a facilitator of learning experiences.
13. love children and to be interested in the total being of the child while demonstrating a love of his/her subject area by presenting it in an interesting way.
14. help people become technically competent in a field and to act as a model of a whole human being.

Coordinator Responses

15. understand.
16. establish a "climate" that is conducive to learning (emotional as well as curricular)
17. to work harmoniously and productively with pupils, colleagues and parents.
18. facilitate learning among all students that will enrich cognitive, affective and psychomotor domains through self-direction and self-evaluation.

Sessional Instructor Responses

19. make the student viable in the world.
20. make people learn while enjoying doing so.

Graduate Student Responses

21. encourage.
22. teach.
23. facilitate student learning.
24. teach.
25. encourage learning.
26. be available for teaching.
27. motivate students to learn.
28. be sensitive to students and their needs.

APPENDIX D

**Phase II Instructions to Participants and
Request for Personal Information**

PLEASE READ ALL INSTRUCTIONS BEFORE BEGINNING

1. The enclosed paper slips contain belief statements about teaching and learning. The statements are in no particular order.
2. As a first step in the making of a scale that may be used to look at opinions about teaching and learning, a number of persons are required to sort these slips into 9 piles. Webster's New World Dictionary defines

OPEN as "... unfolded; spread out ... free to be entered, used ... not decided ... not closed to new ideas, etc. ... generous. free from restrictions ... not secret; public ... frank, candid, as in an open manner ... to cause to be, or to become, open ... to make or become available for use, etc., without restriction ... willing to receive, discuss, etc. ..." and
CLOSED as "to shut. to stop up. to finish; conclude ... to end, finish ... confined or confining ... hidden; secluded. secretive, reserved ... with little space between."

Please use these definitions as guidelines when sorting the slips as outlined below.

3. You have been given 9 envelopes with letters on them, A,B,C,D,E, F,G,H,I. Please arrange these before you in regular order.
4. Sort the items into 9 piles. In pile A you should put those items that, in your opinion, reflect an attitude that is very open. In pile B will be those items that you would regard as slightly less open. Thus each successive group of statements should be slightly less open than the preceding one until you reach pile E which should contain those statements which show a neutral attitude. In pile F would go those items which you regard as slightly closed and so on until you reach pile I which should contain those items which reflect an attitude that is very closed. YOUR OWN AGREEMENT OR DISAGREEMENT WITH THESE ITEMS MUST BE DISREGARDED.
5. Place each item in the pile you feel it belongs. Feel free to use any of the 9 points on the scale but do NOT attempt to get the same number of slips in each pile.
6. The numbers on the slips are identifiers only and have nothing to do with the arrangement in piles.
7. You may find it easier to sort the slips if you look over a number of them, chosen at random, before you begin to sort.
8. After sorting all the slips, put each pile in the appropriate envelope provided. Place all 9 sets and the personal information sheet in the large envelope and return to the researcher.

Thank you for your time and participation in this study.

Fiona Crofton
Graduate Student
Simon Fraser University

Please provide the following information and place this sheet in the large envelope that has been provided.

Sex: Male _____ Female: _____ Birthdate: _____

Number of years post secondary education: _____

The PDP course in which you are currently enrolled: 401/2: _____ 405 _____

Your grade placement/preference: Primary (K-3) _____ Intermediate (4-7) _____
Secondary (8+) _____

Years previous teaching experience (other than PDP) _____

If currently enrolled in 401/2, please indicate your module:

Early Childhood: _____ Open Education: _____ Multicultural: _____

Secondary: _____

APPENDIX E

List of 102 Statements Used in Phase III

LIST OF ITEMS - SCALE 102

1. Evaluation and grading are the responsibility of the teacher.
2. Evaluation and grading are the responsibility of the student.
3. Teachers should consider revision of their teaching methods if these are criticized by their students.
4. Learning should be planned and directed by the teacher.
5. Failing or holding back a student is often a good idea.
6. Subjects are best taught separate from one another.
7. Set routines promote learning.
8. The threat of failure is a good device for motivating students to learn.
9. Too many resources in the classroom tend to confuse students.
10. Teachers must sometimes make criticisms of a student's work without considering how the student might feel about it.
11. Teachers must at times act outside or in contradiction with their beliefs.
12. Evaluation and grading are the responsibility of both teacher and student.
13. Frequently a teacher must be inflexible.
14. A teacher should correct faulty or wrong beliefs or opinions of students.
15. Learning should be planned and directed by the learner.
16. Failing or holding back a student is a practise that should be discontinued.
17. Subjects should be taught as a system of common skills and content.
18. Set routines inhibit learning.
19. Students should be working on the same things at the same time.
20. A teacher's work should be held in higher regard than a student's.

21. It is important for teachers to be clear about what they believe.
22. A teacher should establish close relationships with students.
23. Some students are just lazy.
24. Punishment is a good device for bringing about behavioral change.
25. Students should be permitted to talk with each other primarily as a recreational activity.
26. Teachers should always indicate to students when they have made errors.
27. Evaluation strategies are used to determine objective measures of student learning.
28. It is important for students to learn to respect authority.
29. It is important for teachers to be strict in order to maintain good discipline in the classroom.
30. Emotional and social development are at least as important in evaluation of student progress as academic achievement.
31. Standards should vary with the student.
32. Students should not be permitted to contradict the teacher.
33. Close relationships between teacher and student often interferes with student learning.
34. Some students don't want to learn.
35. There should be alot of student-student interaction in the classroom.
36. Some students behave in certain ways because they are underachievers.
37. Recalling information is of major importance in the classroom.
38. Evaluation is subjective.
39. Students should be permitted to work under their own initiative.
40. Teachers should provide more guidance than answers.
41. Standards should be the same for all students.

42. The public school should take an active role in stimulating social change.
43. A child should not be forced to do something s/he doesn't want to do.
44. Children should be allowed more freedom than they usually get in the execution of learning activities.
45. Learning is essentially a process of increasing one's storehouse of information.
46. Teachers should determine working partners for group work.
47. Students can be trusted to work together without supervision.
48. Students have to be made to work.
49. Discipline in schools should be stricter.
50. Teachers should do less explaining and talking in class.
51. Information gained in school is essential for any kind of work students may wish to pursue in the future.
52. It is more important for students to learn cooperation in working together than to learn competition.
53. Students who present extreme cases of problem behavior are doing the best they can to get along.
54. It is appropriate to lower grades for misconduct in class.
55. Children are being allowed too much freedom.
56. Children should ask permission before engaging in an activity.
57. Students should be given choice of partners for group work.
58. Not enough time is spent on academic preparation in schools.
59. Fear is a good, easy method for controlling students.
60. Teachers should do more explaining of problems.
61. Students must learn to do difficult tasks if they expect to succeed later.
62. Student governments should not have much influence on school policy.
63. The first signs of delinquency in a student must be received by a tightening of discipline and more restrictions.
64. Being grouped according to ability damages the self-confidence of many students.

65. Students who will not do their work must be helped in every way possible.
66. Students who will not do their work must be punished.
67. There are some things students must learn whether they want to or not.
68. It is appropriate for teachers to require additional assignments from students who misbehave.
69. Education has failed unless it has helped students to understand and express their feelings and experiences.
70. Learning rarely follow a logical and sequential pattern.
71. Learning is best promoted in a quiet and orderly classroom when the learner is sitting still and listening to the teacher.
72. The expression of emotions has no place in the classroom.
73. The best way to determine what learning has occurred is by giving pencil and paper tests which require right answer responses.
74. Grades, like A,B,C, etc., are fairly accurate measures of how much a student has learned.
75. Students whose performance in school is inadequate should fail.
76. Among the least important parts of a teacher's role are informing, directing and showing how.
77. Teachers should be given the freedom to teach what they think is right and best.
78. It is important for students to play an active role in formulating rules for the classroom.
79. How a student feels about what s/he learns is as important as what is learned.
80. Students can learn proper discipline only if they are given sufficient freedom.
81. A specific and orderly timetable is a requirement for an effective classroom.
82. A quiet and orderly classroom may be counterproductive to significant pupil learning.
83. Feeling cannot be separated from thinking.
84. The best way to determine whether learning has occurred is by making daily observations of various tasks/contexts.

85. Grades are arbitrary, highly subjective and are invalid as measures of student learning.
86. The teacher's role is primarily one of informing, directing and showing how.
87. Large class sizes prevent teachers from implementing innovative programs and force them into more traditional methods.
88. The learning of proper attitudes is more important than the learning of subject matter.
89. A teacher should be nondirective.
90. The main purpose of evaluation is to arrive at a grade.
91. A primary goal of a teacher is to develop a harmonious working group.
92. Children's unmet emotional needs should be dealt with by professionals other than the teacher.
93. It is more important for a teacher to ask questions that require original thinking than questions that require information recall.
94. Teachers should be directive most of the time.
95. Discipline in schools is too strict.
96. It is more important for the student to learn how to approach and solve problems than it is to master the subject matter of the curriculum.
97. It is important for a teacher to bring students' thinking in line with what is known to be true.
98. Allowing students to decide what they want to do tends to result in disorganized classrooms.
99. Teachers must take responsibility in dealing with children's unmet emotional needs.
100. Curriculum should be adapted to the student.
101. It is more important for a teacher to ask questions that require information recall than questions that require original thinking.
102. It is not part of the role of public schools to promote new social ideas.

APPENDIX F

Phase III Instructions to Participants and
Request for Personal Information

*** PLEASE READ ALL INSTRUCTIONS BEFORE BEGINNING ***

1. The enclosed paper slips contain belief statements about teaching and learning. The statements are in no particular order.
2. As a first step in the making of a scale that may be used to look at opinions about teaching and learning, a number of persons are required to sort these slips into 7 piles.
3. You have been given 7 envelopes with letters on them: A, B, C, D, E, F, G. Please arrange these in front of you in regular order.

4. Sort the items into 7 piles. In Pile A you should put those items that, in your opinion, reflect an attitude which is very favorable. In Pile B will be those items that are slightly less favorable. Thus each successive group of statements should be slightly less favorable than the preceding one until you reach Pile D which should contain those statements which reflect a neutral attitude. In Pile E would go those items which you regard as slightly unfavorable and so on until you reach Pile G which should contain those items which seem to reflect an attitude that is very unfavorable.

PILE A	PILE B	PILE C	PILE D	PILE E	PILE F	PILE G
Very Favorable			Neutral			Very Unfavorable

5. Place each item in the pile you feel it belongs. Feel free to use any of the 7 points but do NOT attempt to get the same number of slips in each pile.
6. The numbers on the slips are identifiers only and have nothing to do with the arrangement in piles.
7. You may find it easier to sort the slips if you look over a number of them before you begin to sort.
8. After sorting all the slips, place each pile in the appropriate envelope provided. Place all 7 sets and the personal information sheet in the large envelope and return to the researchers.

Thank you for your time and participation in this study.

Fiona Crofton
Graduate Student
Simon Fraser University

Please provide the following information and place this sheet in the large envelope that has been provided.

Sex: Male _____ Female: _____ Birthdate: _____

Number of years post secondary education: _____

The IDP course in which you are currently enrolled: 401/2: _____ 405 _____

Your grade placement/preference: Primary (K-3) _____ Intermediate (4-7) _____
Secondary (8+) _____

Years previous teaching experience (other than IDP) _____

If currently enrolled in 401/2, please indicate your module:

Early Childhood: _____ Open Education: _____ Multicultural: _____

Secondary: _____

APPENDIX G

Native Teacher Education Program Data

The following data has not been included in analysis of the study and is included here only for reader interest.

Native Teacher Education Program Subjects
Personal Information Detail

Sex	Birthdate	Post-Sec. Educn	Current PDP Course	Grade Pref.	Teach'g Exp	Module**
F	26.02.52	11.5 yrs	405	PRIM	NIL	MULTI
F	09.04.60	12 yrs	405	INT		MULTI
M	06.05.43	0	404	PRIM	0	MULTI
F	29.11. -		404	PRIM	NIL	
F		7 mos	404	PRIM	5	
F	31.07.49			PRIM		
F*	18.03.44		401 402 405	PRIM		
F*	12.04.59	12 yrs	405	PRIM		

* These two subjects did not complete the task

** Module specifications were not applicable to the NTEP group and subjects were instructed to leave this blank.

Statements Placed in Each of 3 Zones of the Continuum
By the Native Teacher Education Program Subjects
Analysis 1 and 2

Analysis 1

Favorable (Points 1-4)			Neutral (Point 5)			Unfavorable (Points 7-9)		
No. of Stmts	%	% Range	No. of Stmts	%	% Range	No. of Stmts	%	% Range
627	48.9	36-59	120	9.4	4-30	536	41.2	29-51

Analysis 2

Favorable (Points 1-3)			Neutral (Points 4-6)			Unfavorable (Points 7-9)		
No. of Stmts	%	% Range	No. of Stmts	%	% Range	No. of Stmts	%	% Range
468	36.5	25-51	378	29.5	2-50	437	34.1	24-50

APPENDIX H

Summary of Sorting of 102 Statements
by the Unadjusted Sample
n=32

stmt	Accumulative Proportions								
	SV	Q	1	2	3	4	5	6	7
1	3.7	3.8	.125	.281	.406	.563	.656	.813	1.000
2	3.5	2.8	.031	.125	.438	.563	.719	.875	1.000
3	1.1	1.2	.406	.781	.938	.938	.969	1.000	1.000
4	3.7	2.8	.125	.219	.375	.563	.750	.875	1.000
5	5.0	2.4	.031	.063	.188	.281	.500	.719	1.000
6	6.35	1.9	.000	.031	.094	.094	.250	.406	1.000
7	3.3	2.0	.031	.156	.406	.656	.813	.875	1.000
8	6.7	.9	.000	.000	.000	.031	.094	.250	1.000
9	5.8	2.2	.000	.063	.125	.188	.313	.656	1.000
10	6.8	1.25	.000	.063	.063	.063	.219	.281	1.000
11	4.0	4.1	.063	.250	.375	.500	.625	.719	1.000
12	1.2	1.7	.438	.656	.875	.938	.969	.969	1.000
13	5.8	1.9	.031	.031	.094	.125	.313	.625	1.000
14	5.5	2.8	.094	.094	.156	.281	.438	.594	1.000
15	2.7	2.1	.031	.281	.563	.750	.875	.969	1.000
16	4.0	3.8	.125	.156	.406	.500	.656	.719	1.000
17	2.8	3.0	.156	.344	.531	.688	.781	.906	1.000
18	3.0	2.2	.094	.250	.500	.719	.813	1.000	1.000
19	6.0	1.6	.031	.031	.094	.094	.250	.594	1.000
20	5.6	2.0	.000	.031	.094	.156	.375	.656	1.000
21	.8	1.1	.594	.844	.938	.938	.969	1.000	1.000
22	1.2	2.1	.438	.656	.781	.906	.906	.969	1.000
23	4.0	3.6	.063	.219	.406	.500	.594	.844	1.000
24	5.9	1.1	.000	.000	.000	.031	.250	.531	1.000
25	5.2	3.0	.000	.125	.219	.313	.469	.688	1.000
26	4.3	2.3	.031	.094	.281	.438	.688	.906	1.000
27	3.3	2.3	.031	.375	.438	.750	.813	.969	1.000
28	2.3	3.4	.219	.438	.594	.688	.813	.938	1.000
29	5.2	3.3	.031	.063	.281	.313	.469	.625	1.000
30	.9	1.3	.594	.781	.813	.813	.938	.969	1.000
31	2.2	2.3	.219	.438	.656	.813	.844	.969	1.000
32	5.5	3.0	.031	.188	.188	.188	.344	.656	1.000
33	5.6	2.4	.000	.063	.156	.250	.375	.625	1.000
34	4.5	3.7	.031	.063	.344	.406	.594	.688	1.000
35	1.5	1.7	.344	.656	.844	.938	1.000	1.000	1.000
36	3.7	3.6	.063	.156	.438	.531	.625	.750	1.000
37	4.4	3.0	.063	.125	.281	.438	.594	.813	1.000
38	2.6	2.7	.094	.406	.563	.719	.844	1.000	1.000
39	1.5	1.9	.375	.594	.875	1.000	1.000	1.000	1.000
40	1.0	1.2	.500	.813	.938	.969	1.000	1.000	1.000
41	5.3	2.3	.063	.188	.219	.250	.438	.656	1.000
42	2.3	2.0	.125	.406	.656	.844	.938	.938	1.000
43	2.8	1.7	.125	.250	.594	.813	.906	.969	1.000
44	1.9	1.8	.281	.531	.844	.875	.969	1.000	1.000
45	4.5	3.0	.063	.188	.281	.438	.594	.875	1.000

Accumulative Proportions

stmt	SV	Q	1	2	3	4	5	6	7
46	3.8	2.4	.000	.156	.313	.531	.750	.938	1.000
47	1.7	1.5	.219	.594	.844	.969	.969	1.000	1.000
48	6.0	2.4	.000	.063	.094	.156	.438	.500	1.000
49	5.3	2.7	.000	.063	.156	.313	.438	.656	1.000
50	2.8	2.6	.063	.250	.563	.625	.844	.969	1.000
51	3.1	3.3	.000	.281	.469	.625	.719	.906	1.000
52	.9	1.4	.531	.781	.875	.938	.938	1.000	1.000
53	4.8	2.0	.031	.031	.094	.344	.531	.844	1.000
54	6.3	1.4	.000	.031	.031	.063	.156	.438	1.000
55	5.6	1.95	.000	.031	.125	.125	.344	.719	1.000
56	4.6	2.1	.000	.063	.219	.344	.625	.906	1.000
57	2.7	2.1	.031	.313	.563	.781	.875	.969	1.000
58	4.2	2.0	.000	.031	.219	.438	.688	.906	1.000
59	6.3	.6	.000	.000	.000	.000	.094	.250	1.000
60	3.5	2.2	.000	.156	.344	.625	.781	.906	1.000
61	3.0	3.3	.125	.375	.500	.594	.781	.906	1.000
62	5.3	1.9	.000	.031	.031	.125	.438	.625	1.000
63	5.6	1.7	.000	.031	.094	.156	.344	.656	1.000
64	2.0	3.3	.188	.500	.688	.719	.719	.875	1.000
65	2.5	2.3	.094	.313	.625	.750	.906	1.000	1.000
66	5.8	1.65	.031	.031	.156	.188	.281	.625	1.000
67	2.0	2.1	.125	.500	.719	.781	.813	.969	1.000
68	5.4	1.9	.000	.000	.063	.219	.406	.719	1.000
69	1.6	1.7	.344	.594	.844	.875	.938	1.000	1.000
70	4.5	2.7	.000	.094	.219	.438	.563	.813	1.000
71	5.9	1.8	.000	.000	.125	.156	.281	.531	1.000
72	6.3	.7	.000	.000	.000	.000	.063	.219	1.000
73	6.0	2.0	.000	.000	.031	.125	.344	.500	1.000
74	6.1	1.8	.000	.000	.063	.125	.281	.469	1.000
75	5.7	2.0	.031	.031	.125	.219	.344	.594	1.000
76	3.8	3.0	.063	.188	.406	.531	.719	.813	1.000
77	3.1	2.6	.031	.094	.469	.625	.750	.875	1.000
78	.8	1.3	.594	.813	.969	.969	1.000	1.000	1.000
79	1.1	1.15	.438	.813	.938	1.000	1.000	1.000	1.000
80	1.9	1.7	.156	.531	.750	.844	.938	.969	1.000
81	4.0	3.6	.063	.219	.313	.500	.656	.750	1.000
82	2.5	2.9	.063	.375	.594	.688	.813	.969	1.000
83	2.1	1.8	.156	.469	.656	.781	.813	.875	1.000
84	2.0	1.75	.188	.500	.781	.844	.875	.906	1.000
85	3.2	3.2	.156	.313	.469	.594	.781	.938	1.000
86	4.0	3.2	.000	.125	.375	.500	.594	.813	1.000
87	4.2	3.8	.188	.313	.375	.469	.688	.875	1.000
88	2.7	2.0	.188	.344	.625	.875	.969	1.000	1.000
89	4.4	3.3	.000	.156	.281	.406	.625	.750	1.000
90	6.1	1.6	.000	.000	.031	.125	.250	.438	1.000

Accumulative Proportions

Stmt	SV	Q	1	2	3	4	5	6	7
91	1.9	1.6	.125	.563	.844	.906	1.000	1.000	1.000
92	3.2	2.5	.125	.219	.438	.688	.781	.938	1.000
93	.9	1.0	.531	.875	.938	.969	.969	.969	1.000
94	4.4	2.8	.094	.188	.188	.438	.625	.875	1.000
95	4.2	2.2	.000	.063	.188	.469	.688	.813	1.000
96	.75	1.2	.625	.813	.875	1.000	1.000	1.000	1.000
97	4.2	3.1	.031	.188	.313	.469	.656	.813	1.000
98	5.0	3.0	.000	.094	.250	.375	.500	.750	1.000
99	2.5	1.0	.094	.250	.750	.781	.813	.969	1.000
100	1.05	1.2	.469	.875	1.000	1.000	1.000	1.000	1.000
101	6.1	1.0	.000	.000	.000	.031	.094	.438	1.000
102	5.6	2.6	.063	.094	.188	.281	.344	.656	1.000

APPENDIX I

Summary of Sorting of 102 Statements
by the Adjusted Sample
n=26

Accumulative Proportions

Stmt	SV	Q	1	2	3	4	5	6	7
1	3.5	3.3	.115	.269	.423	.615	.731	.923	1.000
2	3.8	2.8	.038	.077	.385	.538	.692	.846	1.000
3	1.3	1.1	.346	.769	.923	.923	.962	1.000	1.000
4	3.2	2.6	.154	.269	.462	.692	.846	.923	1.000
5	4.8	2.1	.000	.038	.192	.308	.577	.846	1.000
6	6.0	2.1	.000	.038	.115	.115	.308	.500	1.000
7	3.2	1.8	.038	.154	.423	.731	.885	.962	1.000
8	6.2	.9	.000	.000	.000	.038	.115	.308	1.000
9	5.5	1.7	.000	.077	.115	.192	.346	.692	1.000
10	6.2	1.8	.000	.077	.077	.077	.269	.346	1.000
11	3.5	3.9	.077	.269	.423	.577	.692	.769	1.000
12	1.7	1.9	.385	.577	.846	.923	.962	.962	1.000
13	5.6	1.7	.000	.000	.077	.115	.308	.615	1.000
14	4.8	2.6	.115	.115	.192	.346	.538	.731	1.000
15	3.0	2.3	.038	.269	.500	.731	.846	.962	1.000
16	4.1	3.5	.038	.077	.346	.462	.654	.731	1.000
17	2.8	2.6	.154	.346	.538	.731	.846	.962	1.000
18	3.3	2.1	.000	.115	.423	.692	.808	1.000	1.000
19	5.6	1.7	.038	.038	.115	.115	.308	.692	1.000
20	5.3	1.8	.000	.038	.115	.192	.423	.731	1.000
21	.85	1.3	.577	.808	.923	.923	.962	1.000	1.000
22	1.7	2.4	.346	.577	.731	.885	.885	.962	1.000
23	4.8	3.5	.038	.192	.385	.423	.538	.846	1.000
24	5.6	1.6	.000	.000	.000	.038	.308	.654	1.000
25	4.6	3.1	.000	.154	.269	.385	.577	.769	1.000
26	3.8	2.1	.038	.115	.346	.538	.808	1.000	1.000
27	3.0	2.2	.038	.462	.500	.846	.923	.962	1.000
28	2.2	2.6	.192	.462	.654	.769	.808	.923	1.000
29	4.6	3.3	.038	.077	.346	.385	.577	.769	1.000
30	1.0	2.0	.538	.731	.769	.769	.923	.962	1.000
31	2.3	2.3	.192	.423	.654	.808	.846	.962	1.000
32	5.5	3.8	.038	.231	.231	.231	.385	.769	1.000
33	5.2	3.5	.000	.077	.192	.308	.462	.692	1.000
34	4.3	3.3	.038	.077	.385	.462	.654	.769	1.000
35	1.6	1.5	.231	.615	.846	.962	1.000	1.000	1.000
36	3.2	3.3	.038	.154	.462	.577	.692	.808	1.000
37	4.3	2.8	.077	.115	.308	.462	.654	.808	1.000
38	3.0	3.0	.115	.308	.500	.654	.808	1.000	1.000
39	2.0	2.0	.308	.500	.846	1.000	1.000	1.000	1.000
40	1.2	1.3	.385	.769	.923	.962	1.000	1.000	1.000
41	5.0	3.8	.077	.231	.231	.269	.500	.692	1.000
42	2.3	1.8	.115	.385	.692	.846	.923	.923	1.000
43	2.8	1.7	.077	.231	.538	.808	.923	.962	1.000
44	2.2	1.5	.154	.423	.808	.846	.962	1.000	1.000
45	3.8	3.3	.077	.231	.346	.538	.654	.885	1.000

Accumulative Proportions

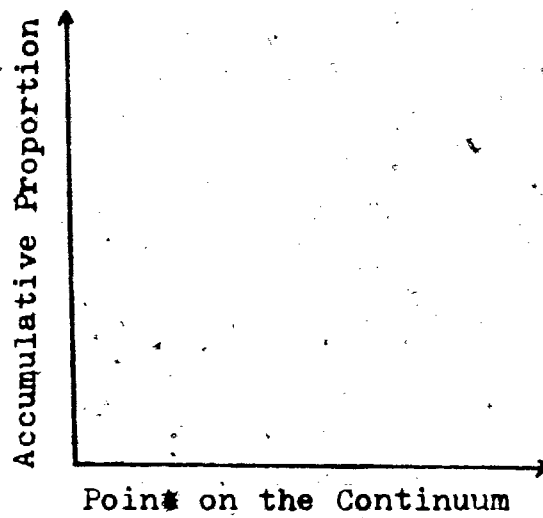
Stmt	SV	Q	1	2	3	4	5	6	7
46	3.5	2.2	.000	.192	.346	.615	.808	1.000	1.000
47	2.0	1.4	.154	.500	.808	.962	.962	1.000	1.000
48	5.0	2.5	.000	.077	.115	.192	.500	.577	1.000
49	5.0	3.05	.000	.077	.192	.385	.500	.692	1.000
50	3.0	2.5	.038	.192	.500	.577	.846	.962	1.000
51	3.0	3.0	.000	.346	.500	.654	.769	.885	1.000
52	.8	1.5	.577	.769	.885	.962	.962	1.000	1.000
53	4.7	1.95	.038	.038	.077	.346	.538	.885	1.000
54	6.1	1.3	.000	.038	.038	.077	.192	.462	1.000
55	5.2	2.05	.000	.038	.154	.154	.423	.808	1.000
56	4.3	2.2	.000	.077	.269	.423	.731	.962	1.000
57	3.0	2.0	.038	.269	.500	.769	.885	.962	1.000
58	4.2	2.2	.000	.038	.269	.462	.731	.923	1.000
59	6.3	.9	.000	.000	.000	.000	.115	.308	1.000
60	3.2	1.5	.000	.192	.423	.769	.923	1.000	1.000
61	2.7	3.1	.115	.385	.538	.654	.808	.923	1.000
62	5.2	1.9	.000	.000	.000	.115	.462	.654	1.000
63	5.4	1.7	.000	.038	.077	.154	.385	.731	1.000
64	2.1	3.15	.115	.462	.654	.692	.692	.885	1.000
65	2.6	2.1	.077	.308	.654	.769	.923	1.000	1.000
66	5.6	1.6	.000	.000	.154	.192	.308	.692	1.000
67	2.0	2.0	.077	.500	.731	.769	.808	.962	1.000
68	5.1	1.8	.000	.000	.077	.269	.462	.846	1.000
69	1.6	1.7	.269	.577	.846	.885	.923	1.000	1.000
70	4.5	2.7	.000	.115	.231	.423	.577	.808	1.000
71	5.6	1.9	.000	.000	.154	.192	.346	.615	1.000
72	6.3	.8	.000	.000	.000	.000	.077	.269	1.000
73	5.6	2.1	.000	.000	.038	.154	.385	.577	1.000
74	5.65	1.9	.000	.000	.077	.154	.346	.577	1.000
75	5.3	2.5	.038	.038	.154	.269	.423	.654	1.000
76	4.0	3.0	.038	.192	.346	.500	.692	.808	1.000
77	3.0	2.2	.038	.115	.500	.654	.808	.962	1.000
78	1.0	1.4	.500	.769	.962	.962	1.000	1.000	1.000
79	1.4	1.3	.346	.769	.923	1.000	1.000	1.000	1.000
80	2.0	1.8	.115	.500	.731	.846	.962	1.000	1.000
81	3.7	2.7	.038	.231	.346	.577	.768	.885	1.000
82	2.8	3.0	.038	.308	.538	.546	.808	1.000	1.000
83	2.25	2.1	.115	.423	.654	.808	.846	.923	1.000
84	1.9	1.6	.231	.538	.846	.923	.962	1.000	1.000
85	3.75	2.7	.154	.231	.385	.538	.769	.962	1.000
86	3.5	2.8	.000	.154	.423	.577	.692	.923	1.000
87	3.8	3.55	.192	.346	.423	.538	.769	.962	1.000
88	2.6	2.2	.154	.346	.577	.885	1.000	1.000	1.000
89	4.5	3.2	.000	.115	.269	.423	.615	.731	1.000
90	6.1	1.6	.000	.000	.038	.115	.231	.462	1.000

Accumulative Proportions

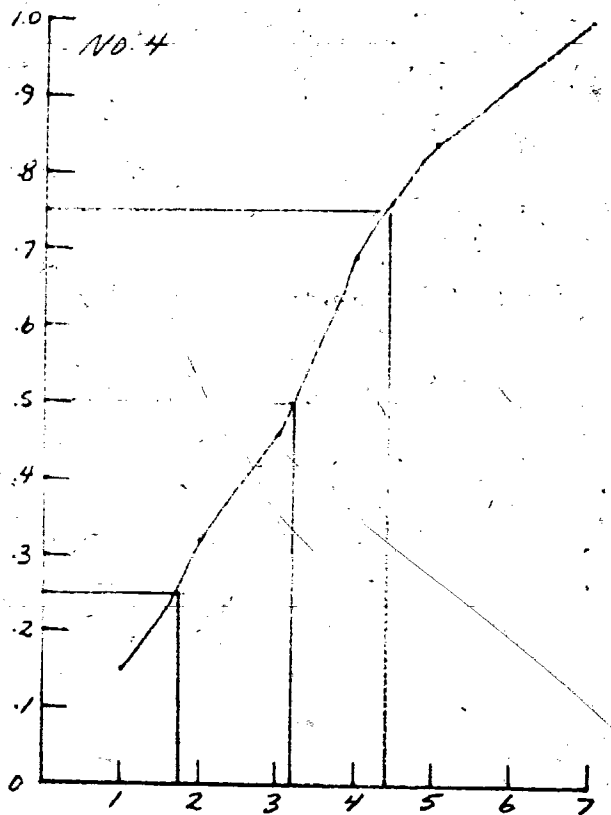
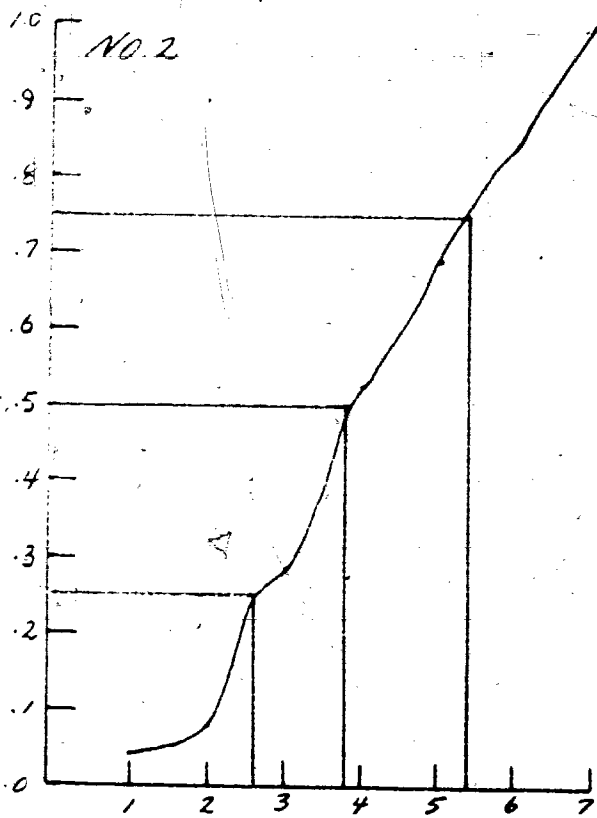
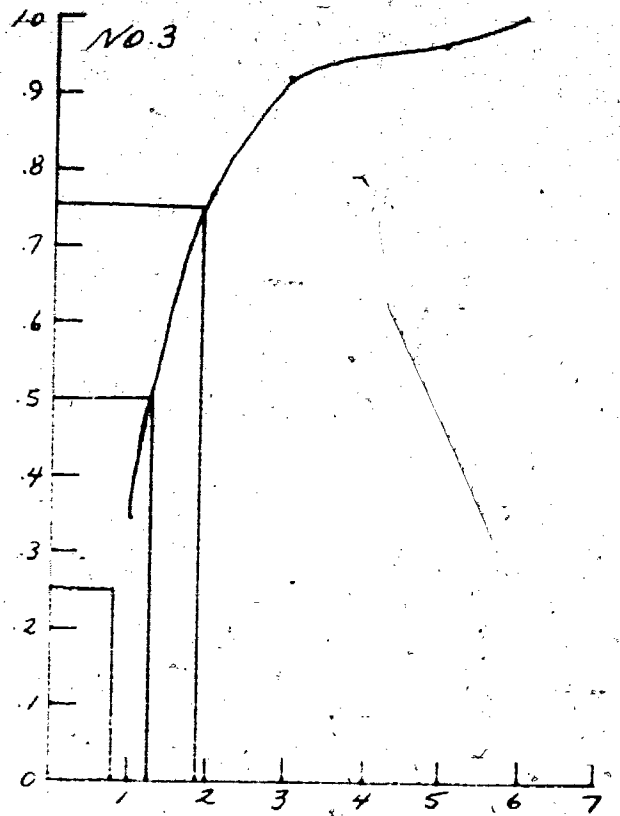
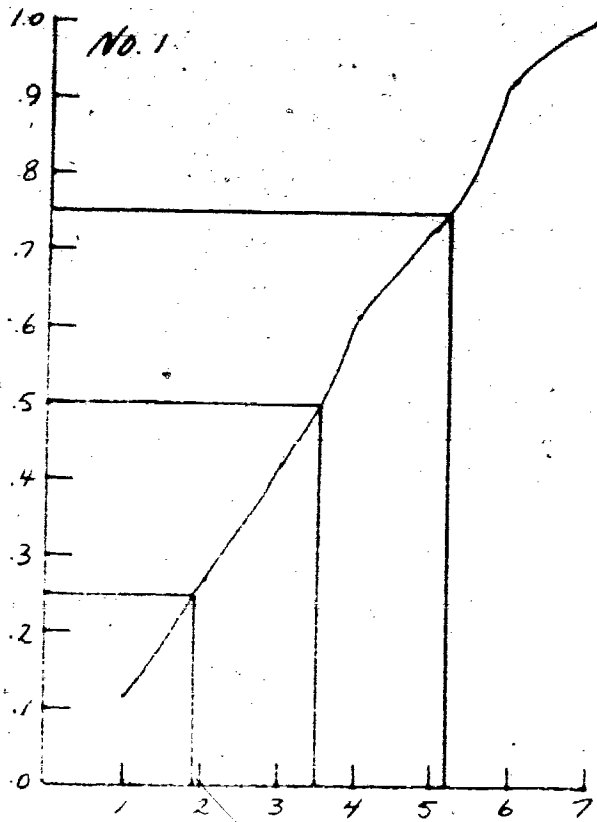
Stint	SV	Q	1	2	3	4	5	6	7
91	1.9	1.4	.115	.538	.846	.923	1.000	1.000	1.000
92	3.2	2.0	.115	.231	.423	.731	.846	.962	1.000
93	1.1	1.0	.462	.846	.923	.962	.962	.962	1.000
94	3.7	3.0	.115	.231	.231	.538	.731	.962	1.000
95	4.1	1.9	.000	.038	.115	.462	.692	.808	1.000
96	.9	1.2	.577	.808	.846	1.000	1.000	1.000	1.000
97	3.6	2.8	.038	.231	.385	.577	.769	.923	1.000
98	4.6	2.9	.000	.077	.269	.423	.538	.808	1.000
99	2.6	2.4	.077	.231	.692	.731	.769	.962	1.000
100	1.0	1.0	.500	.885	1.000	1.000	1.000	1.000	1.000
101	6.0	1.1	.000	.000	.000	.038	.115	.500	1.000
102	5.5	1.9	.077	.077	.154	.231	.308	.692	1.000

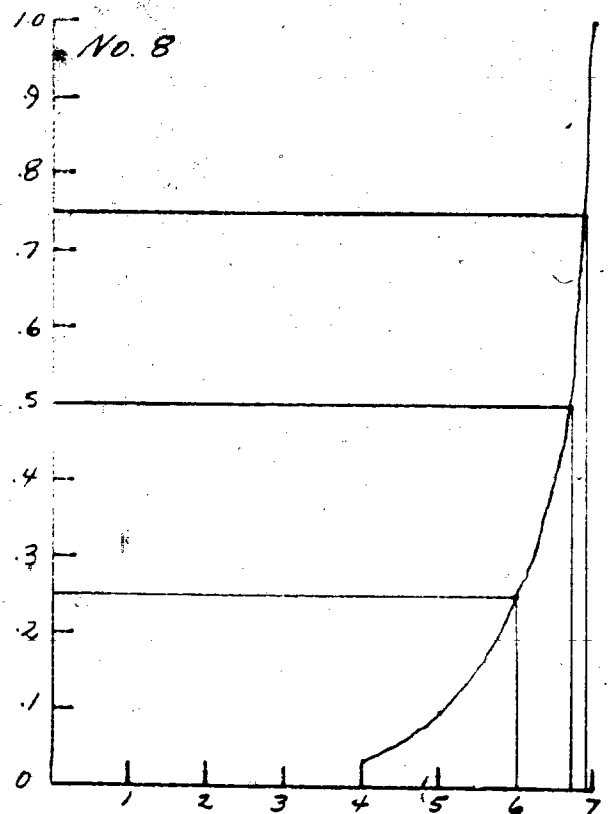
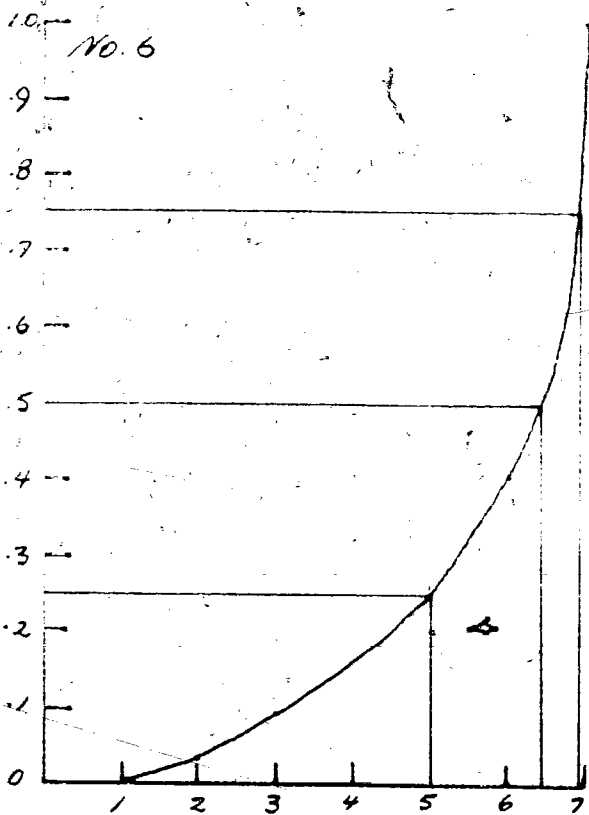
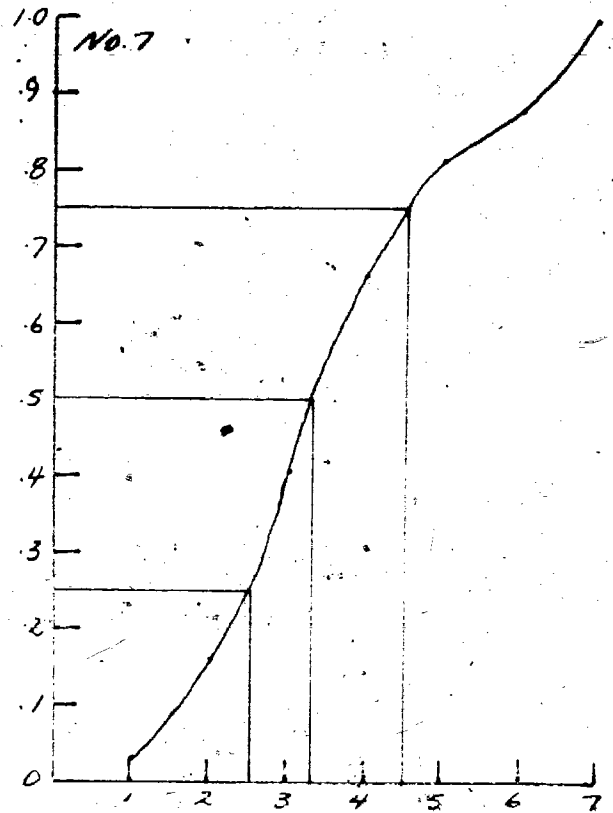
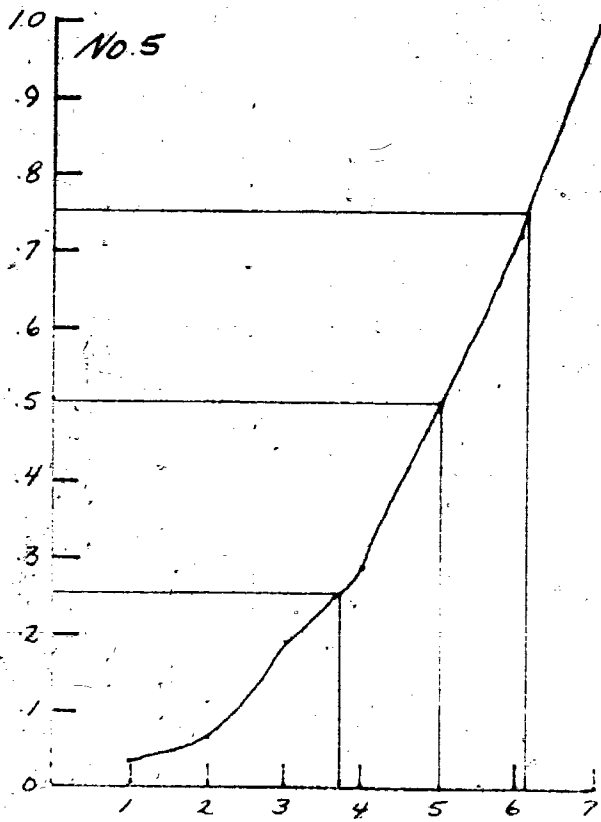
APPENDIX J

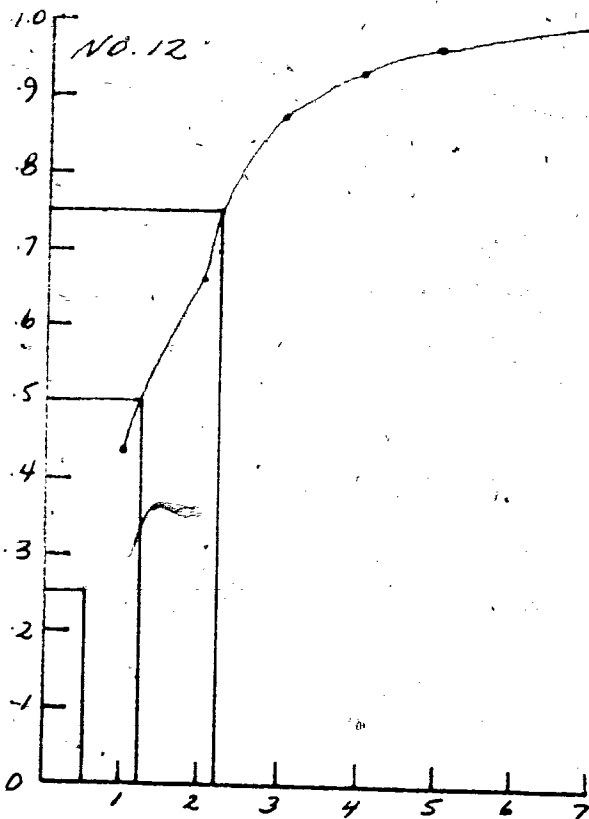
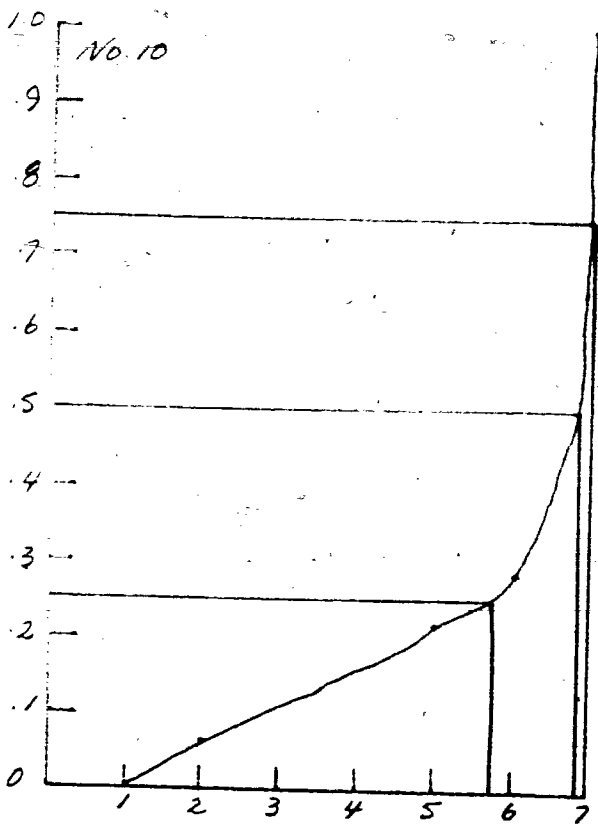
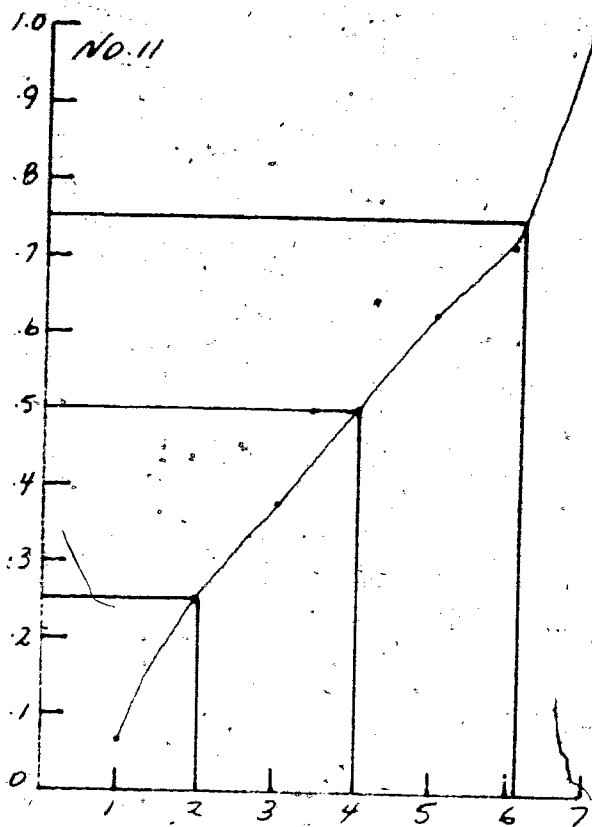
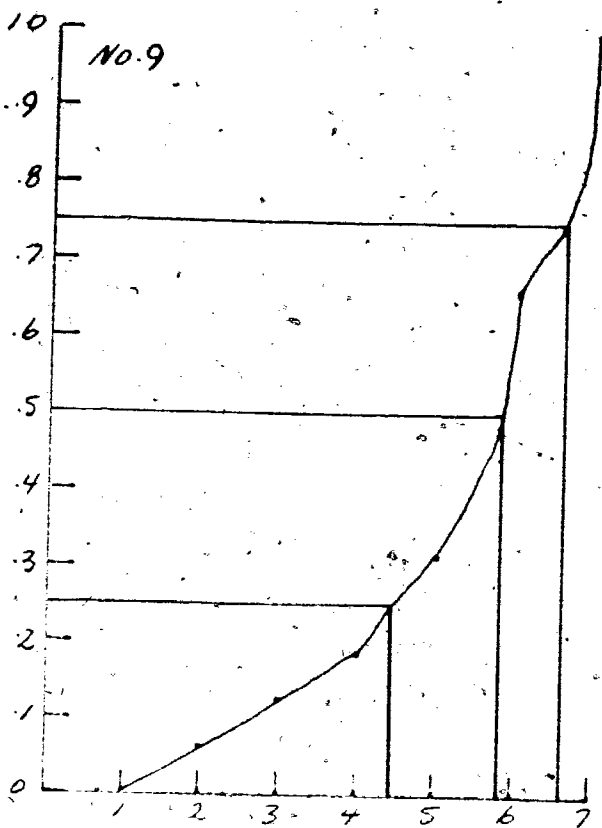
Phase III Graphs of Accumulative Proportions:
The Unadjusted Sample

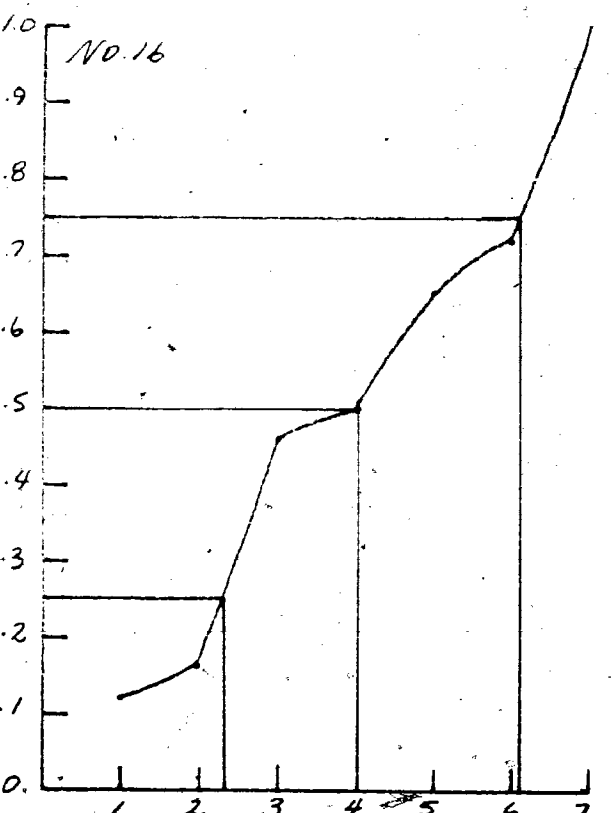
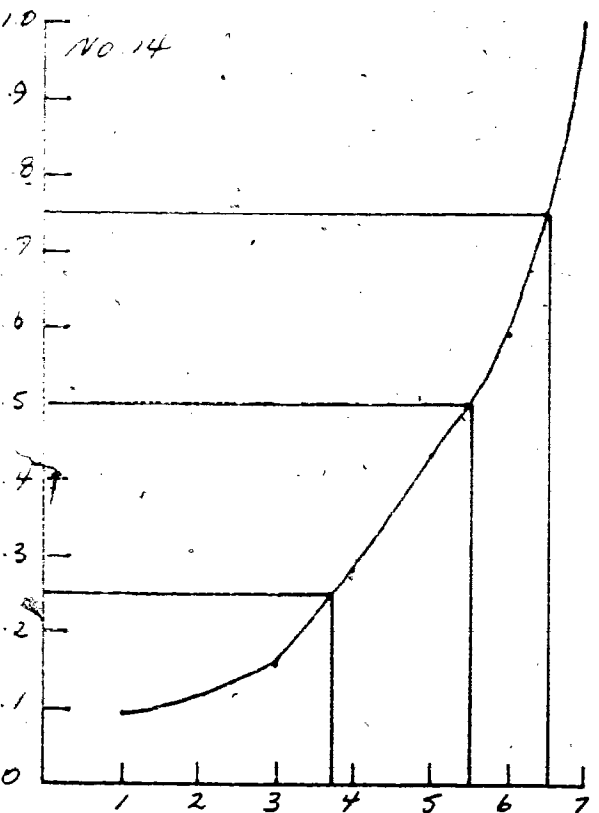
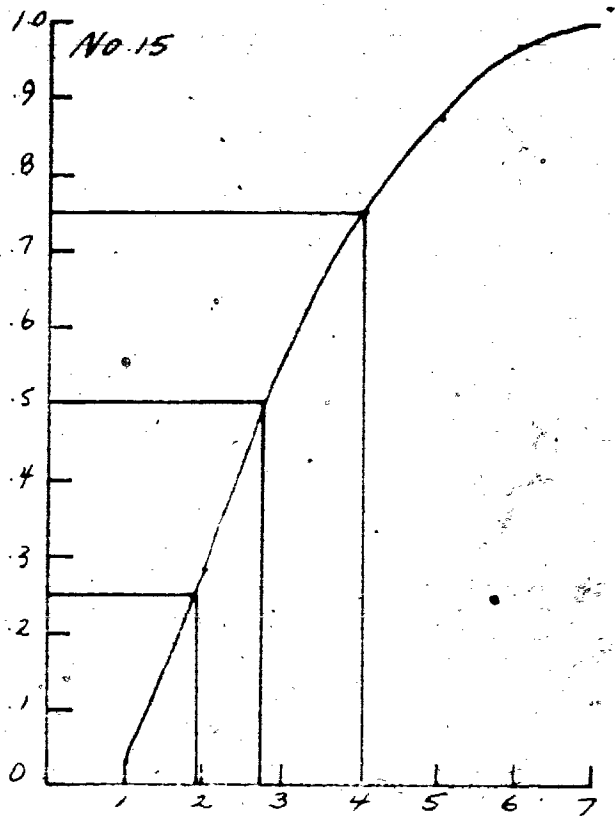
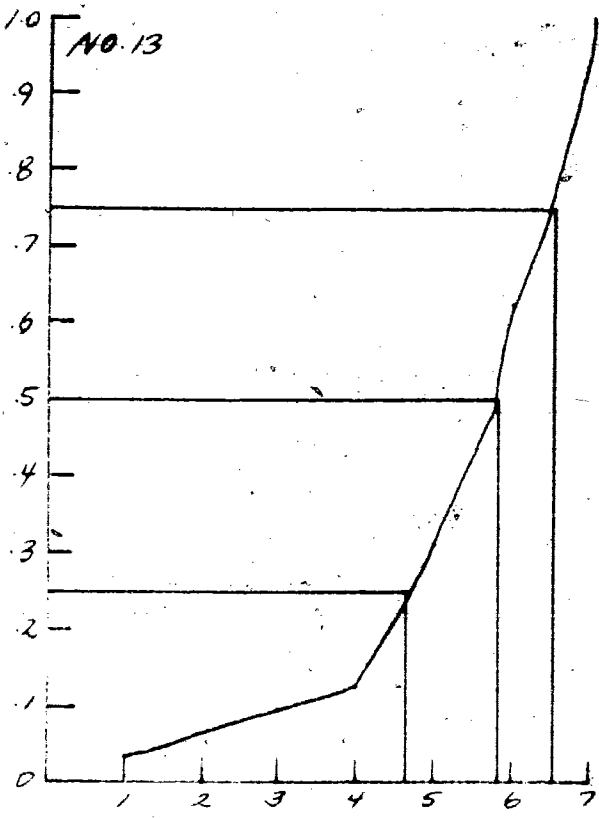


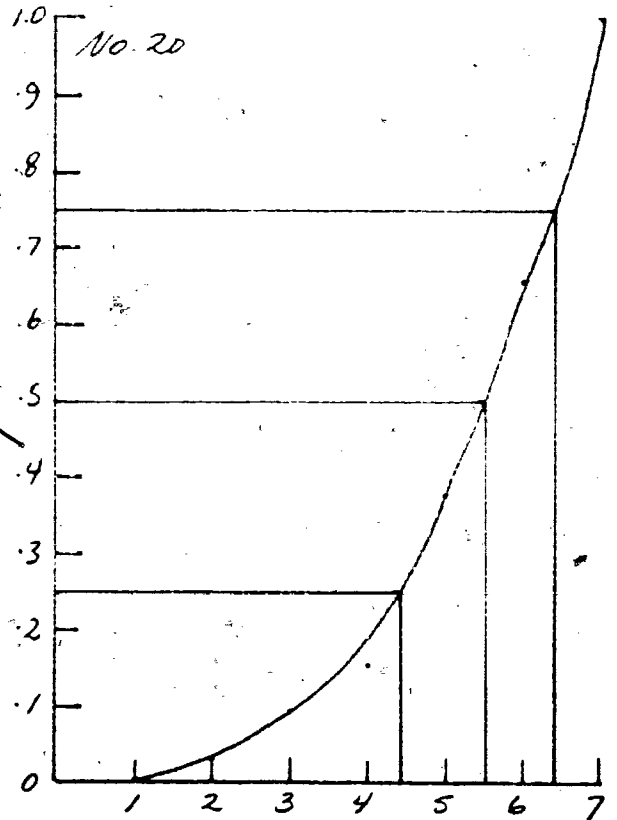
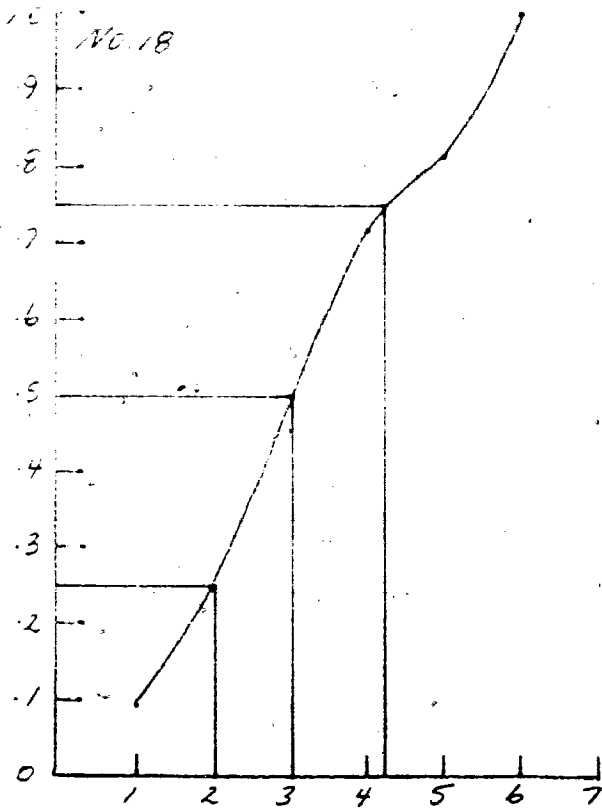
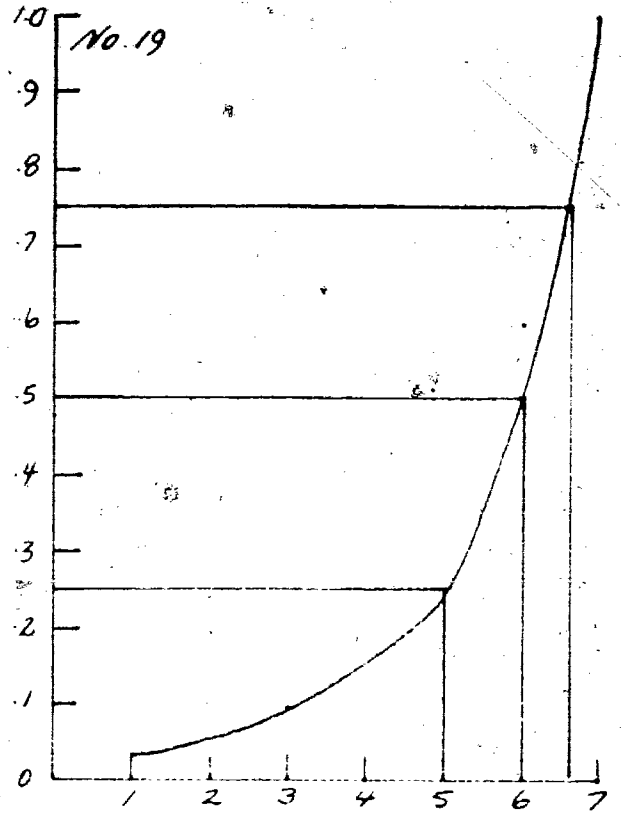
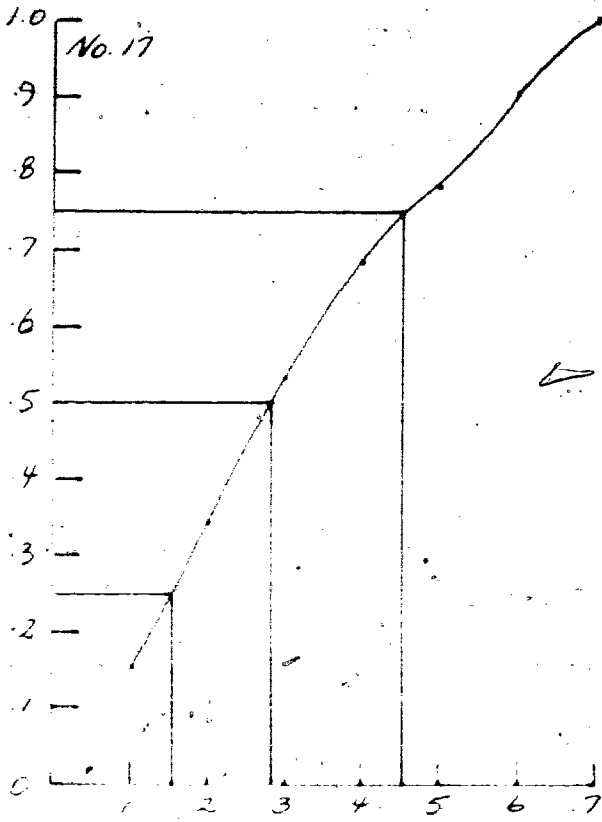
The following graphs were used to determine scale values and Q values.

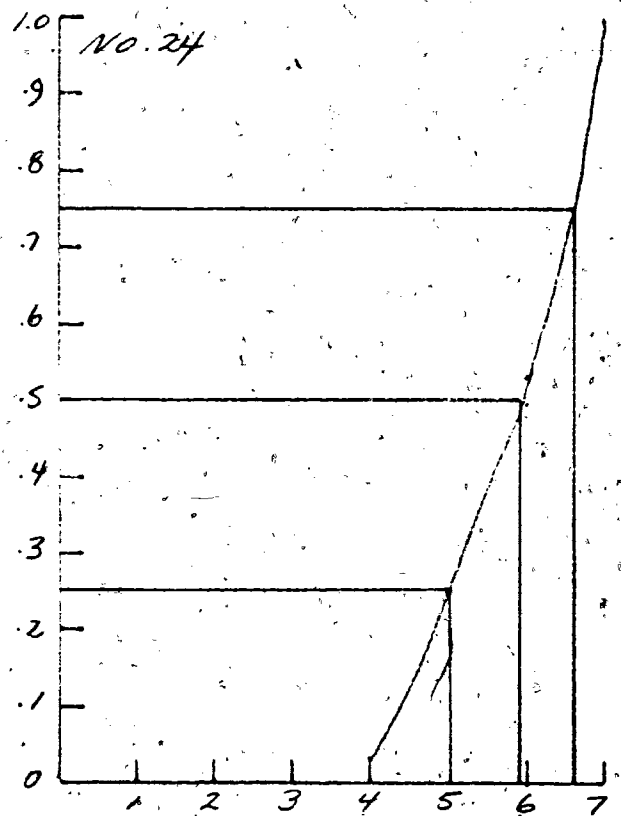
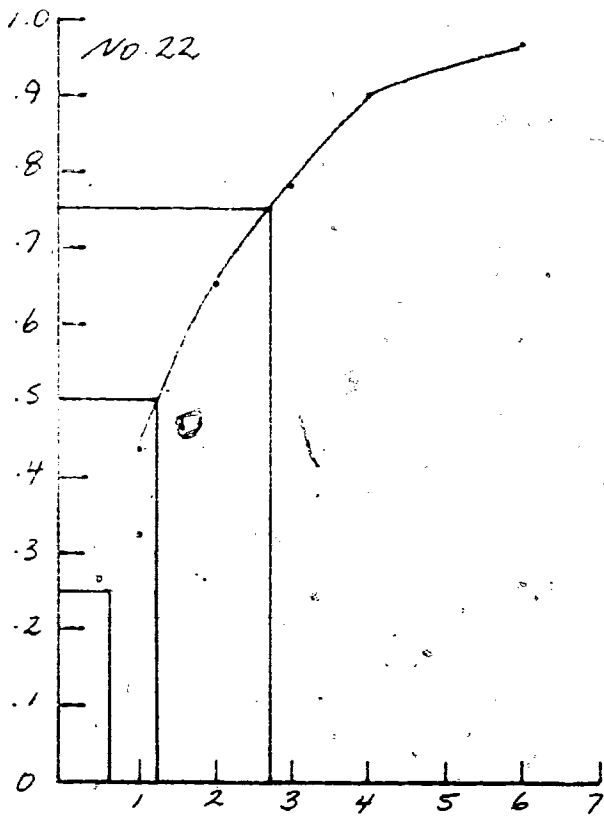
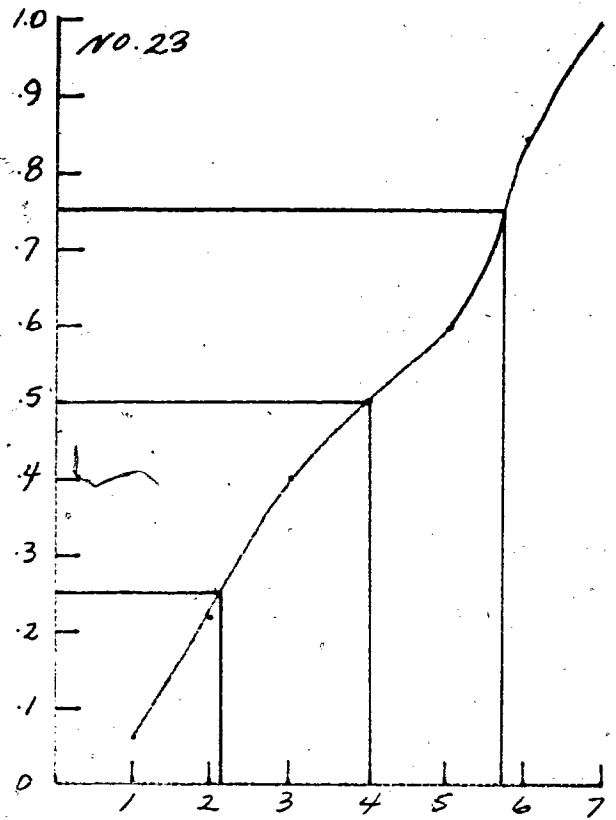
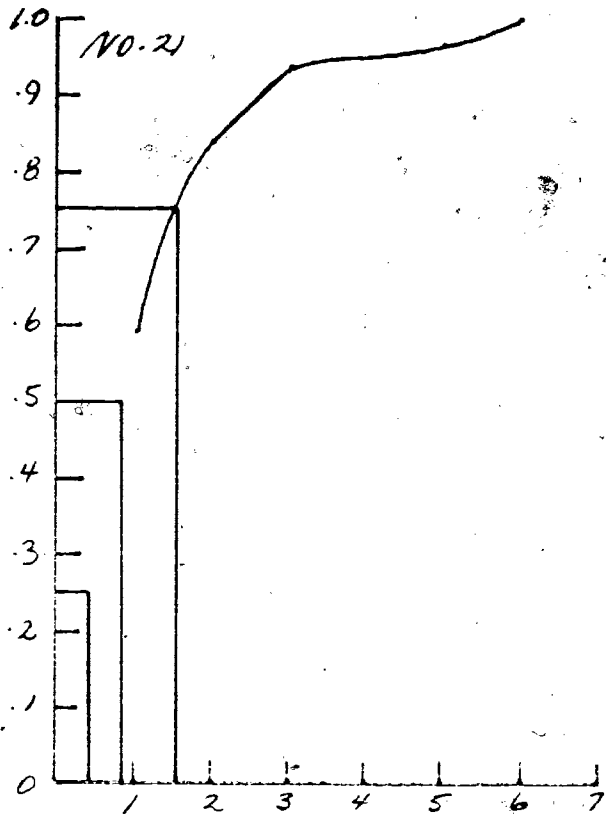


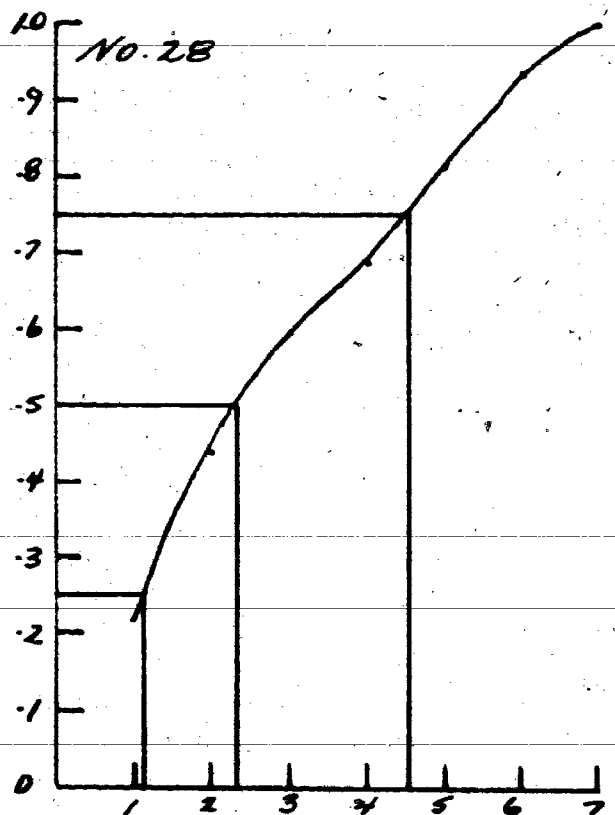
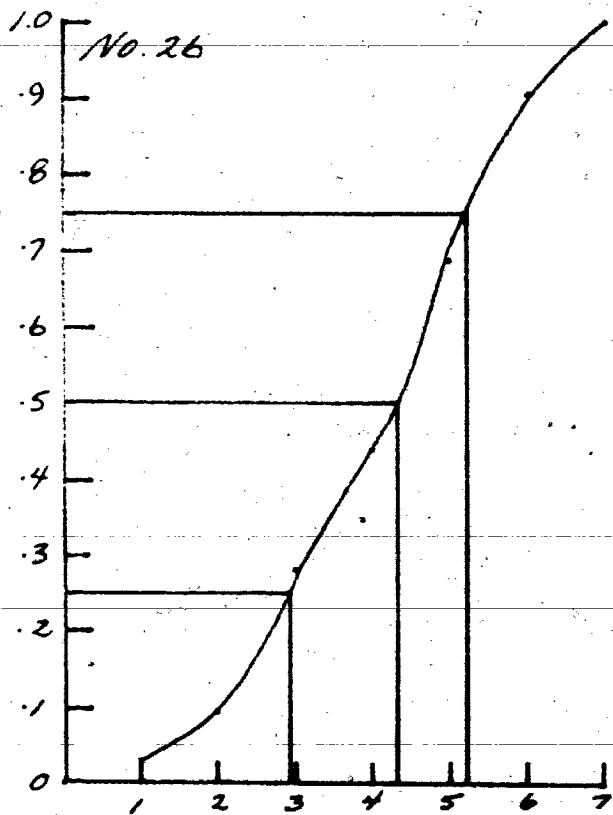
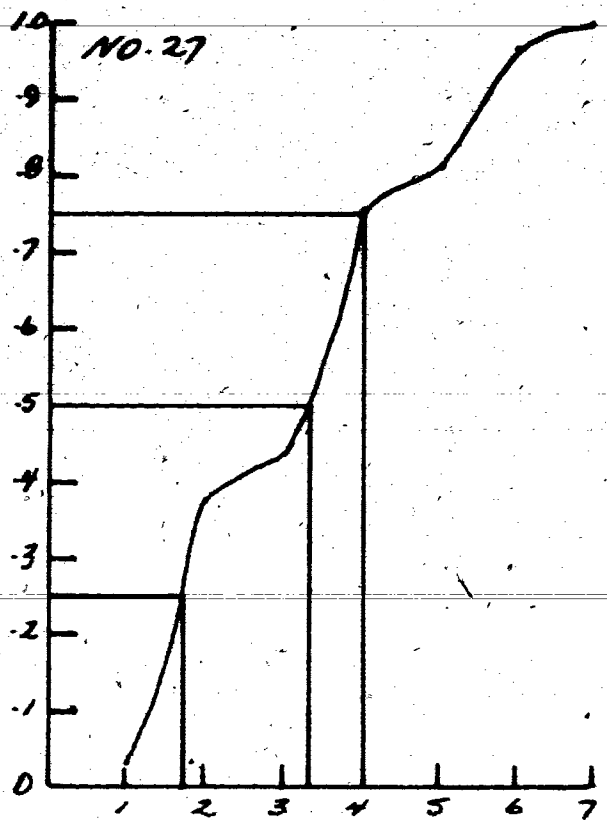
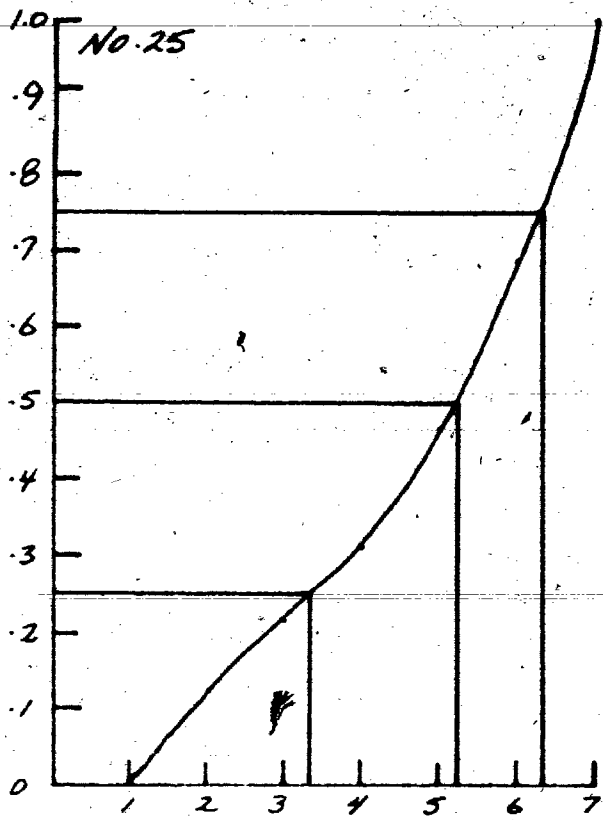


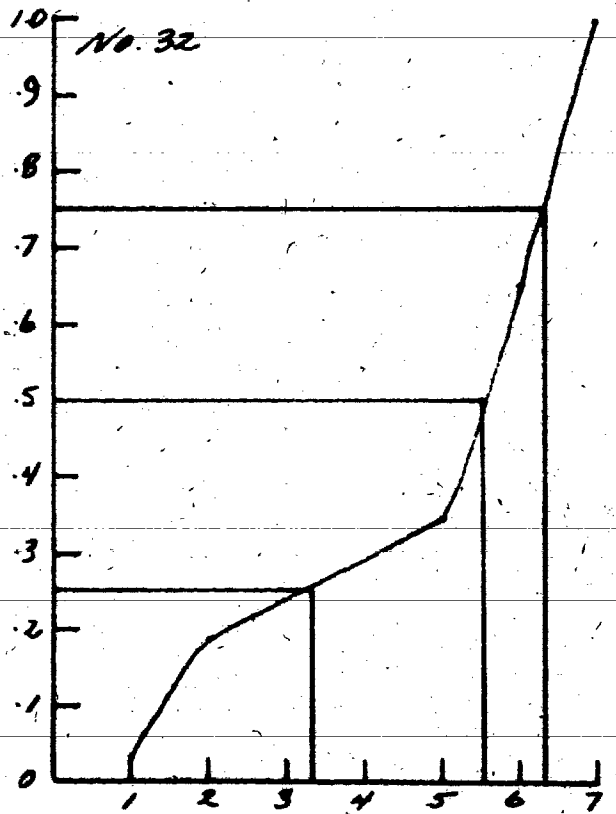
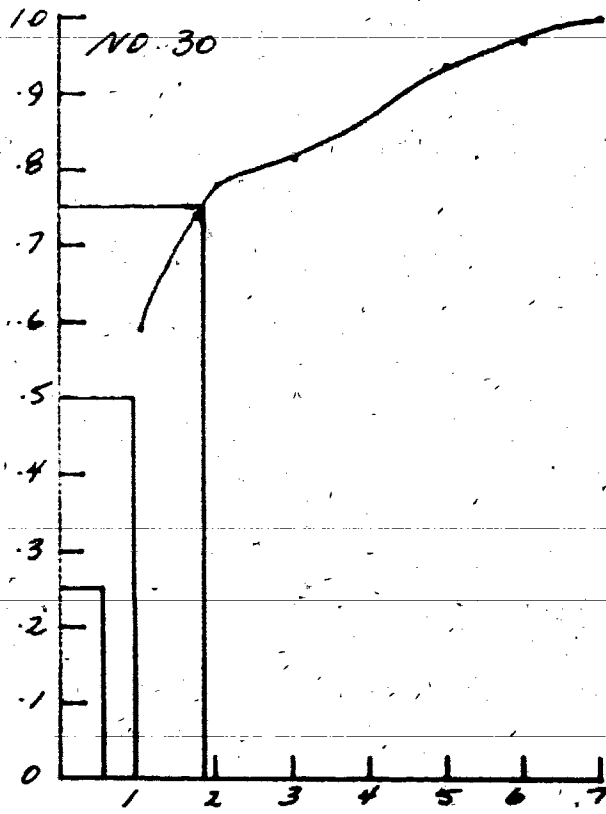
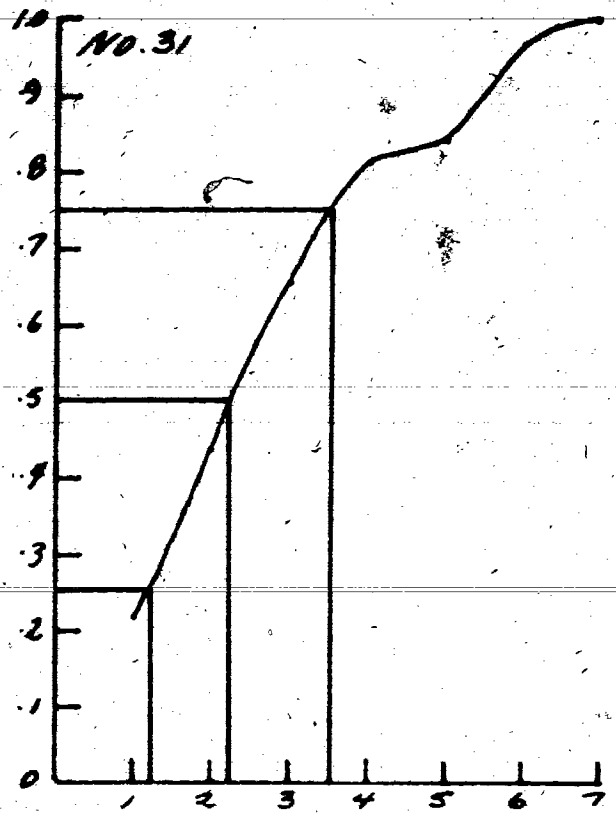
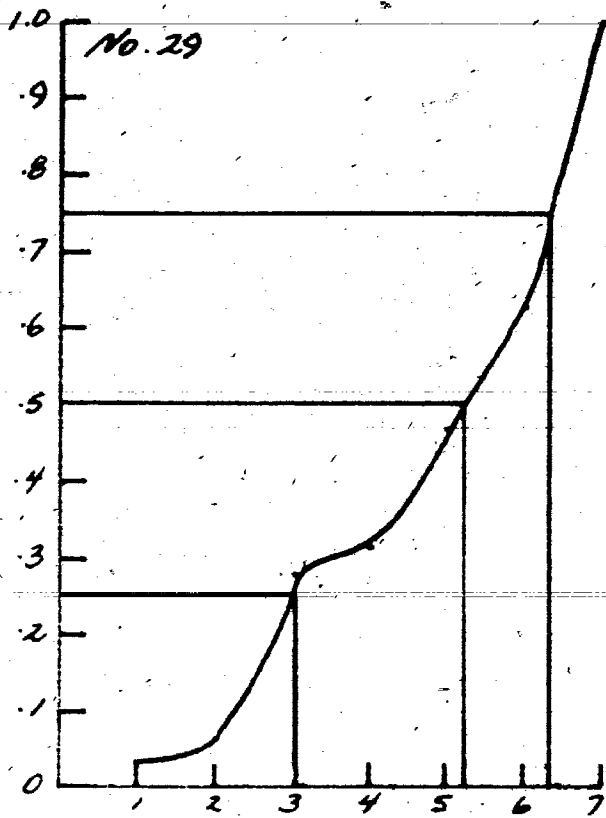


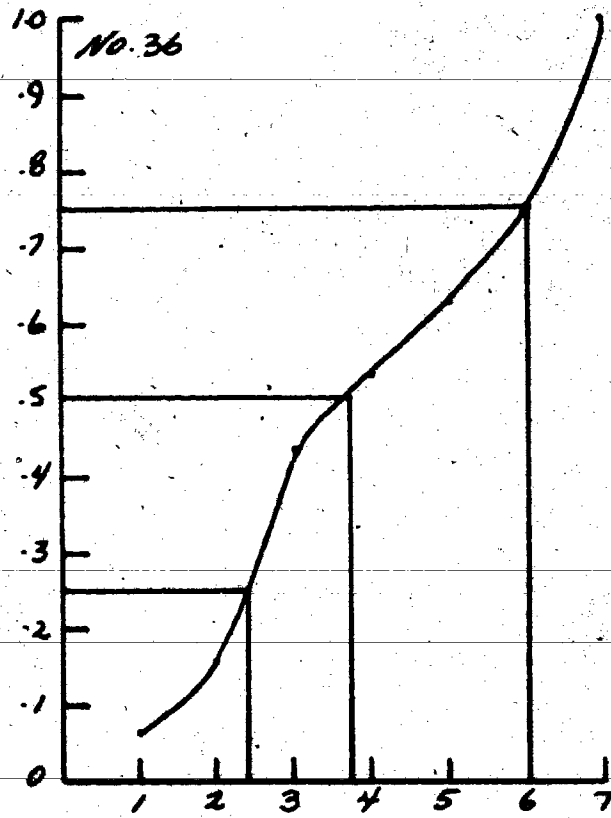
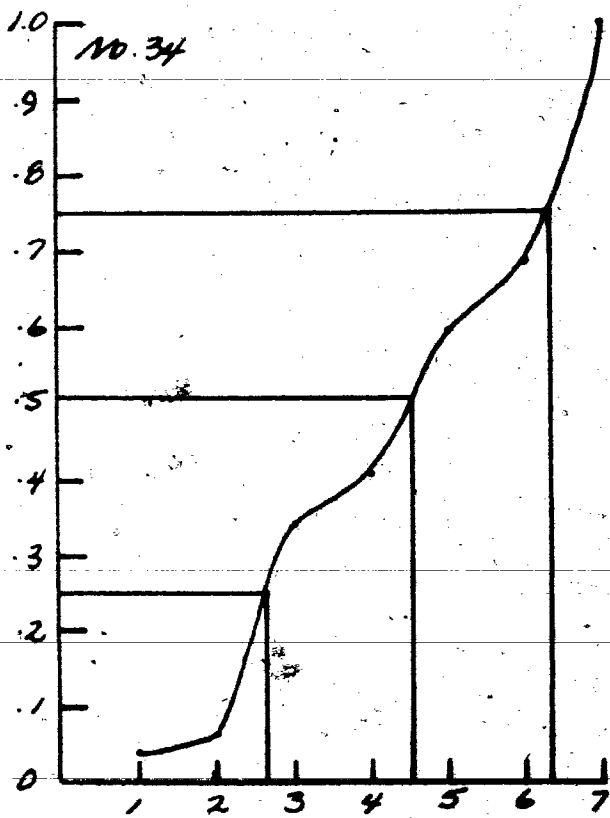
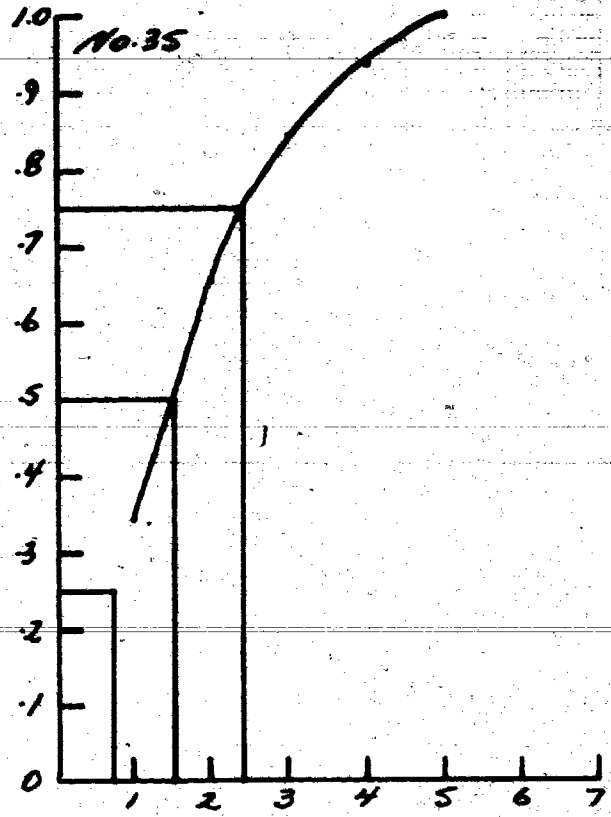
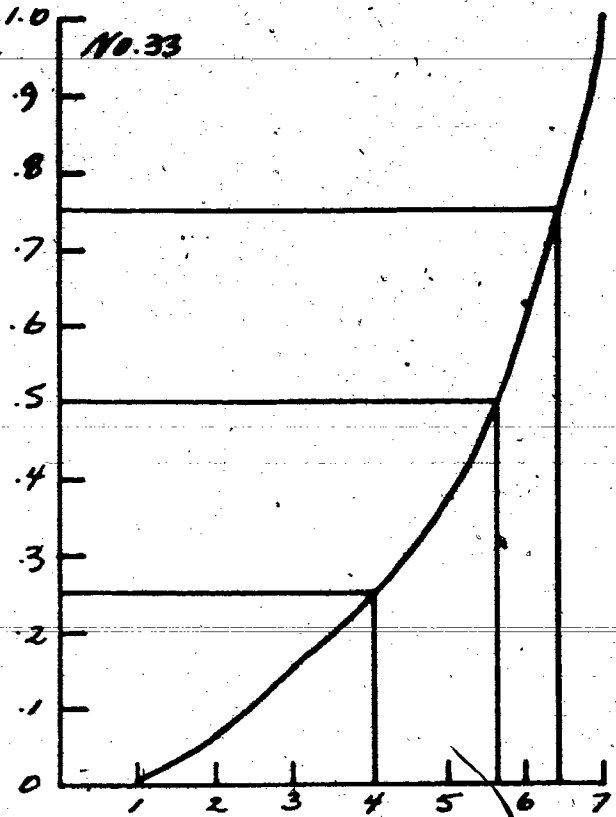


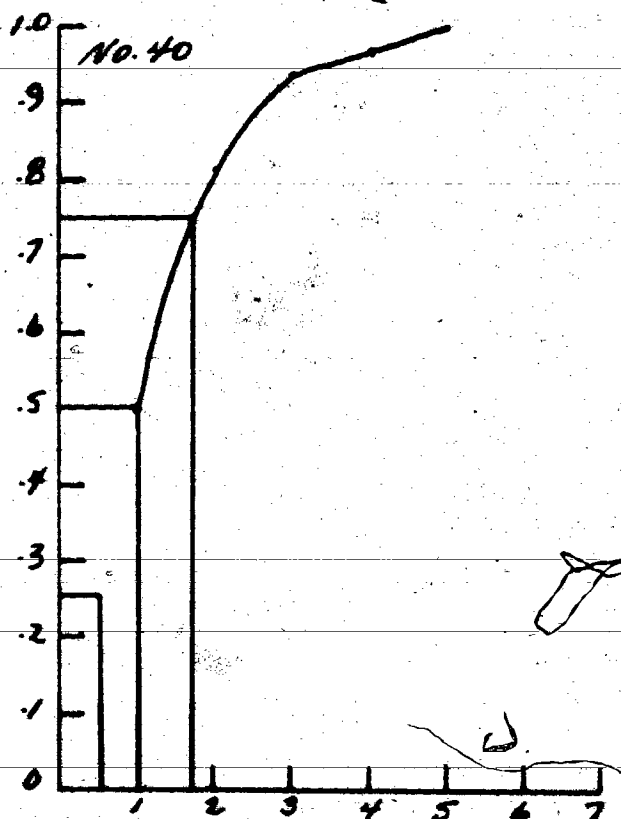
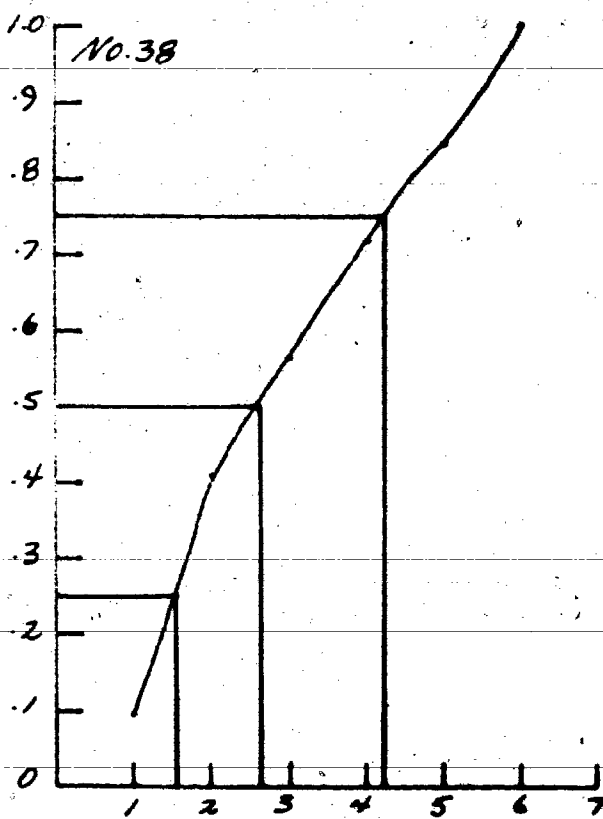
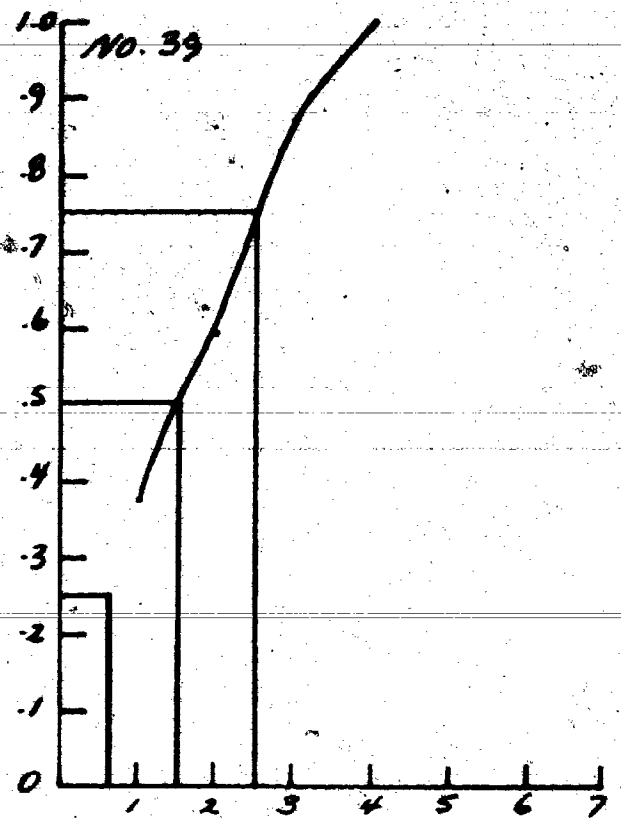
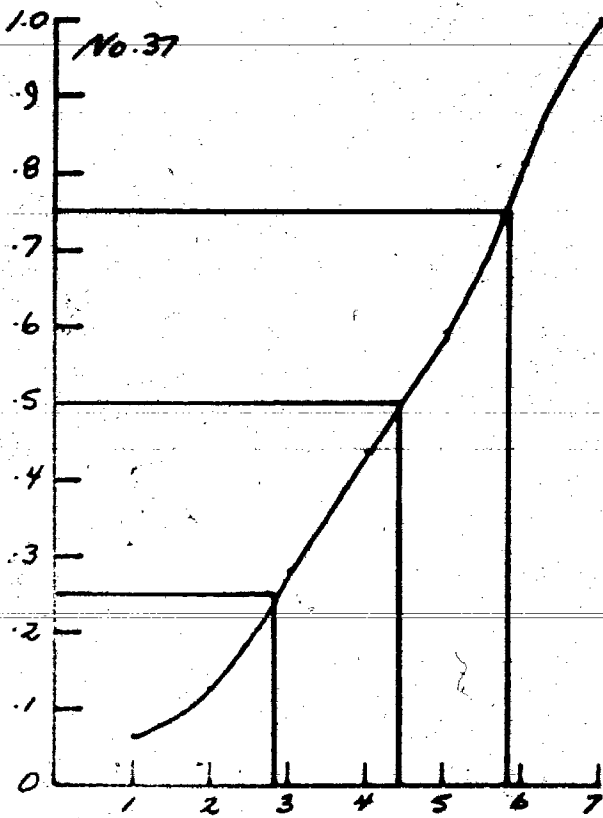


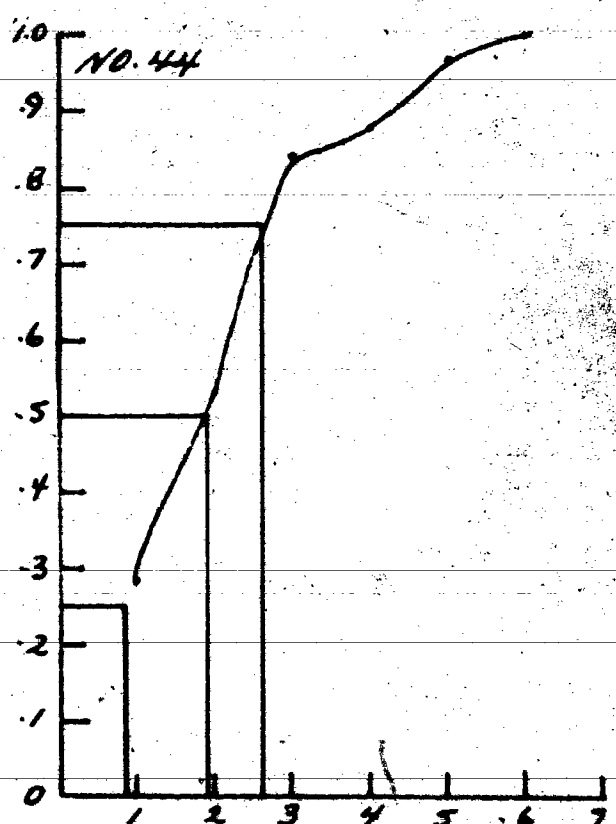
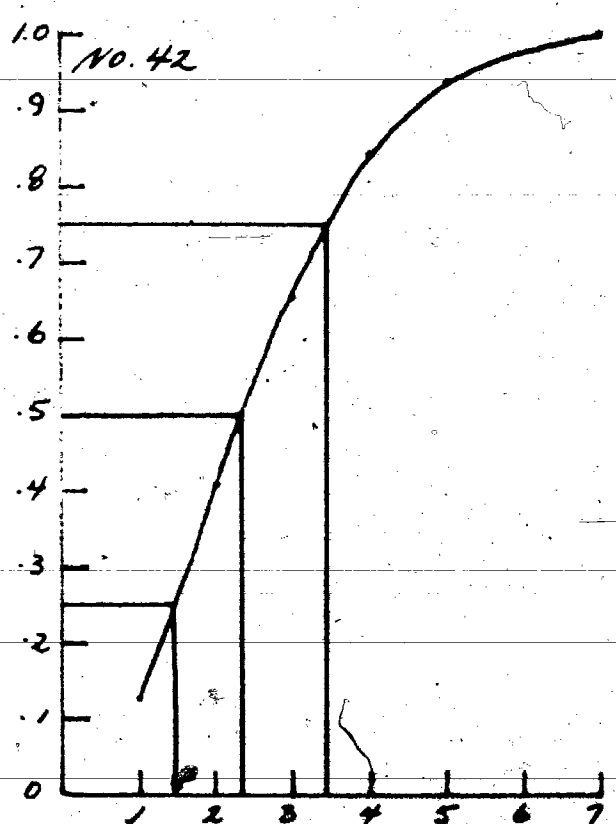
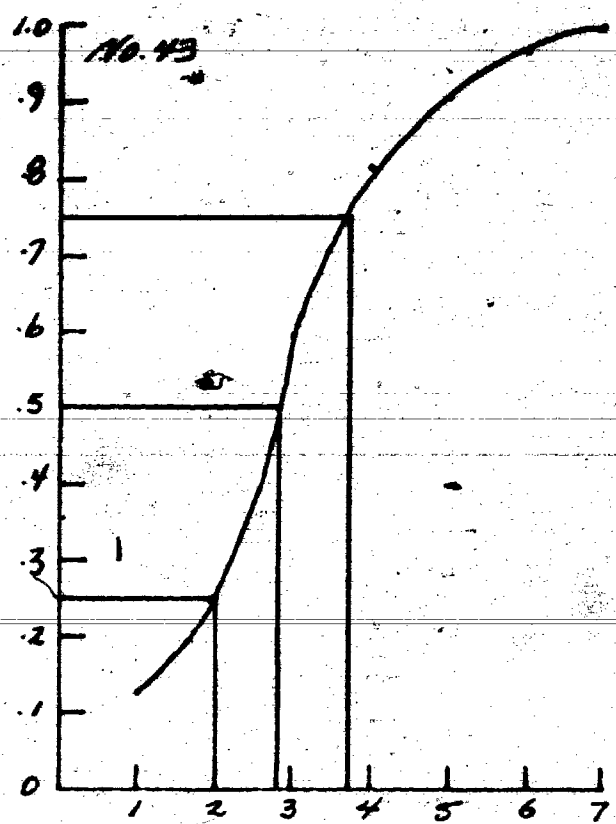
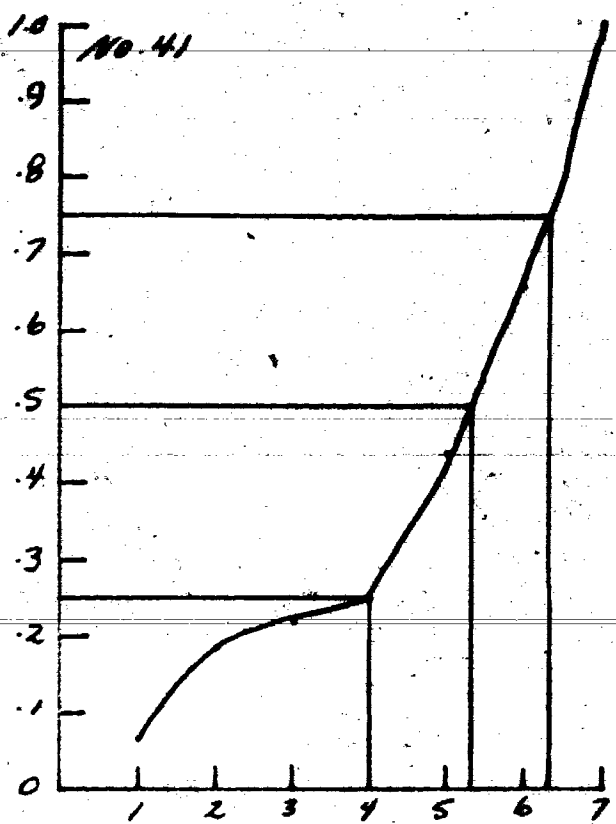


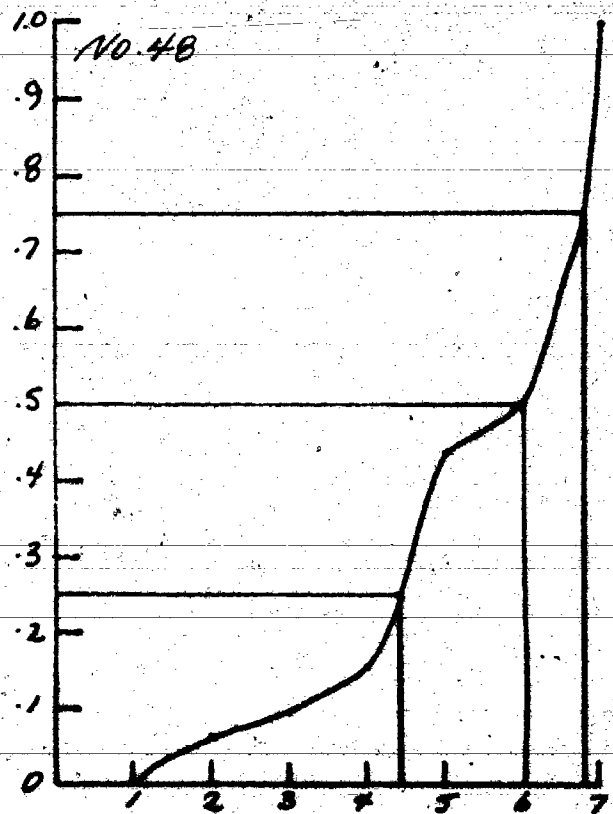
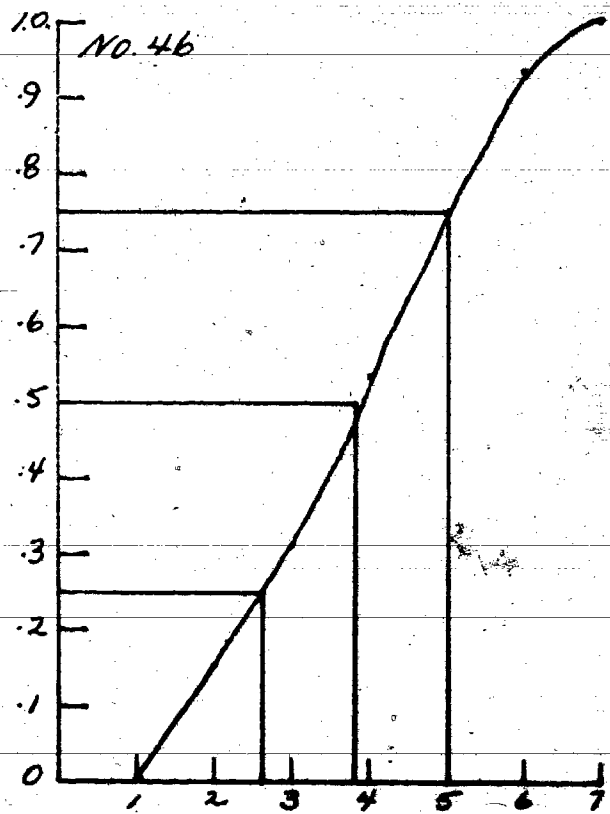
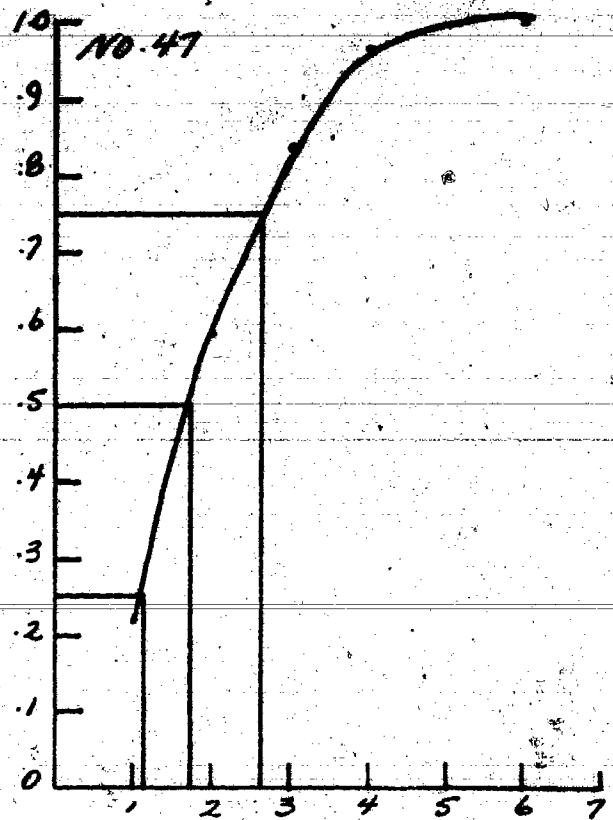
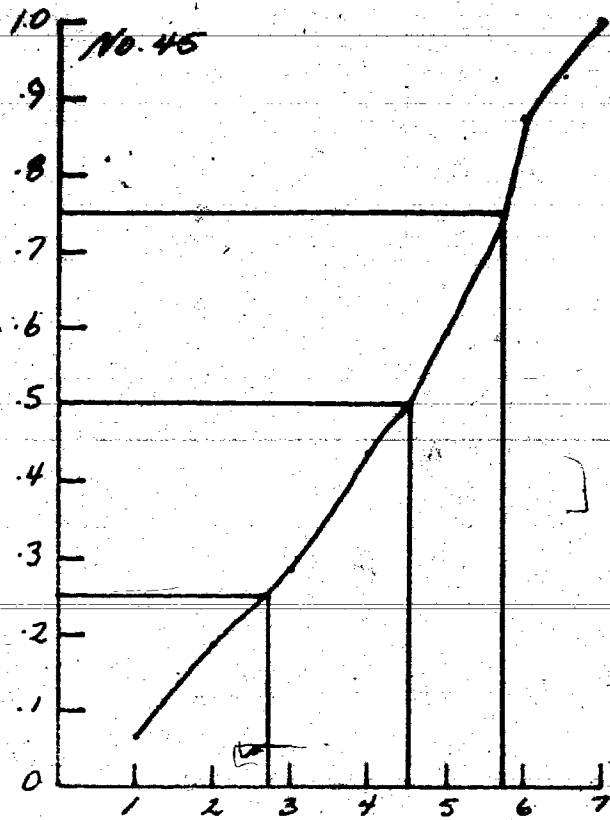


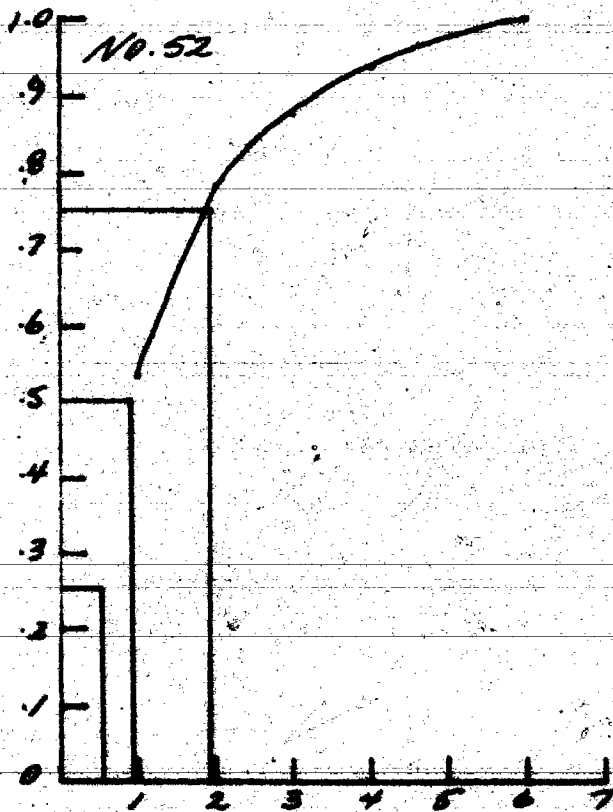
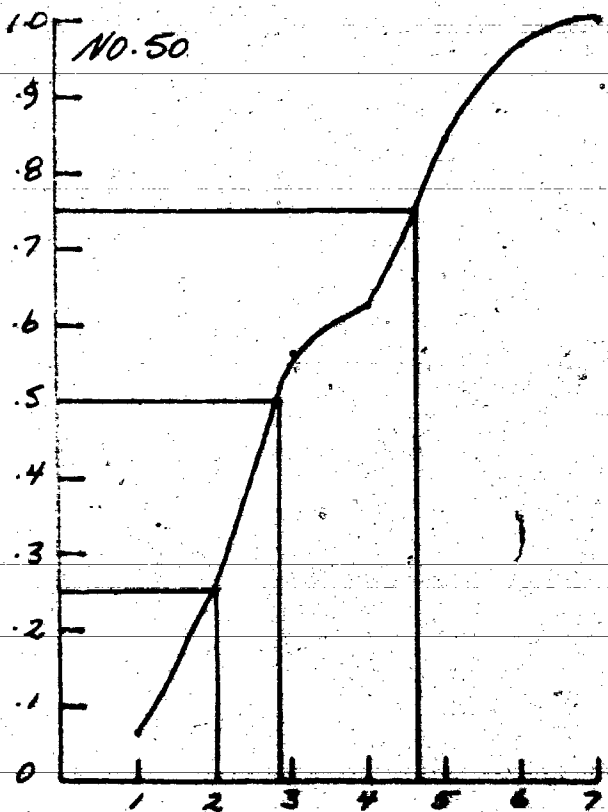
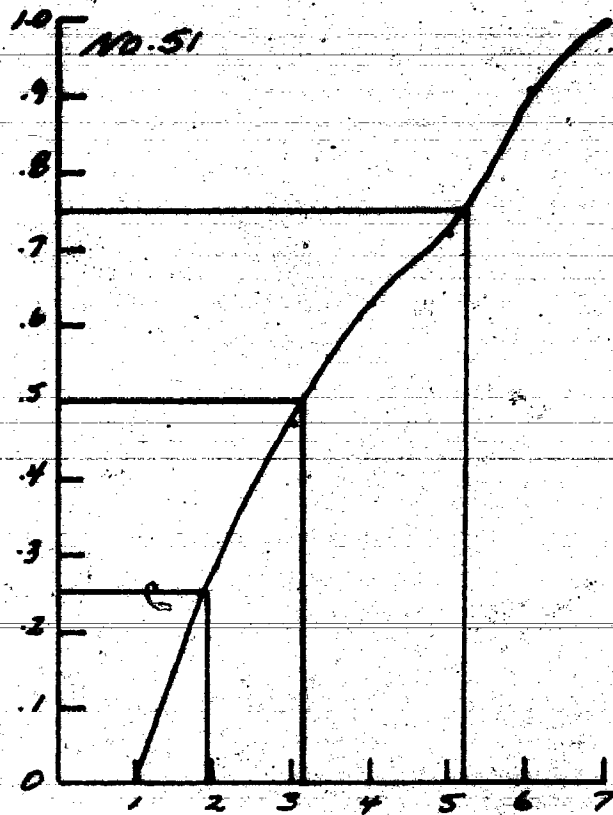
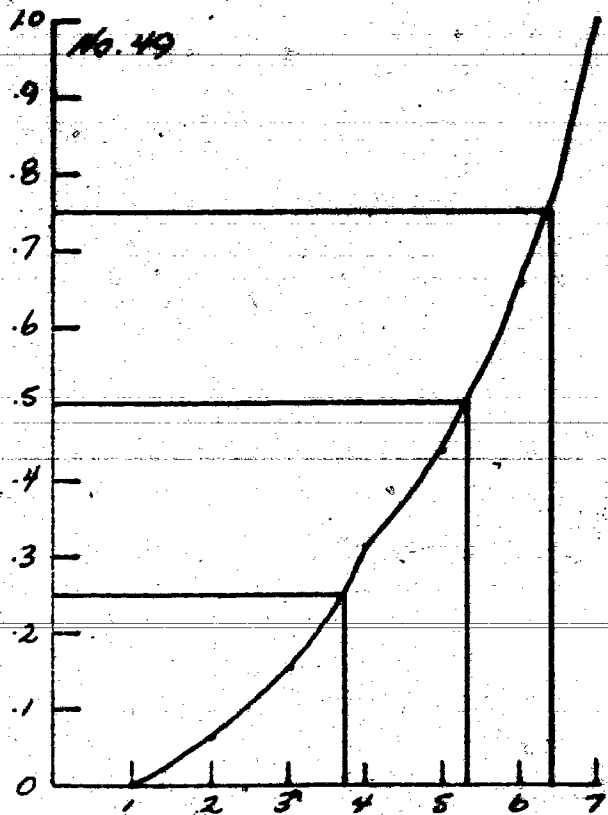


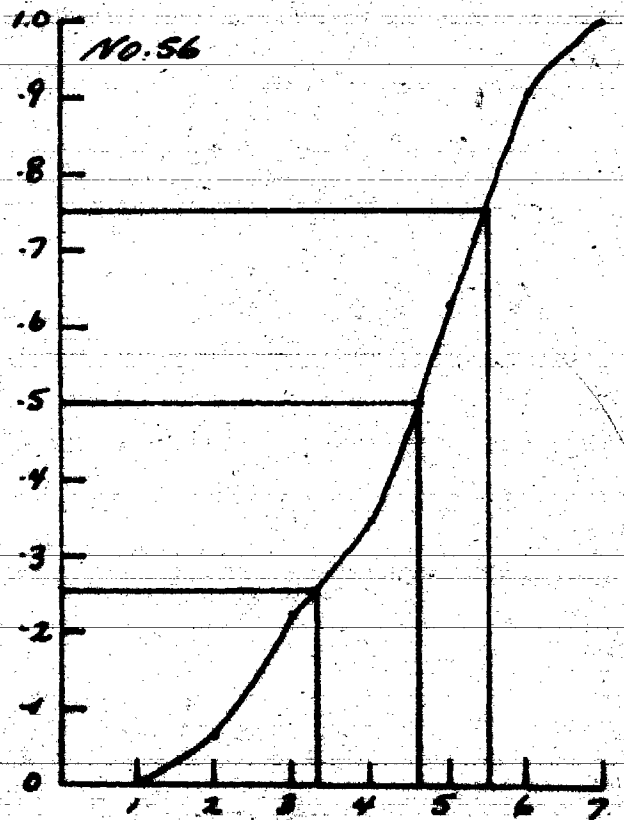
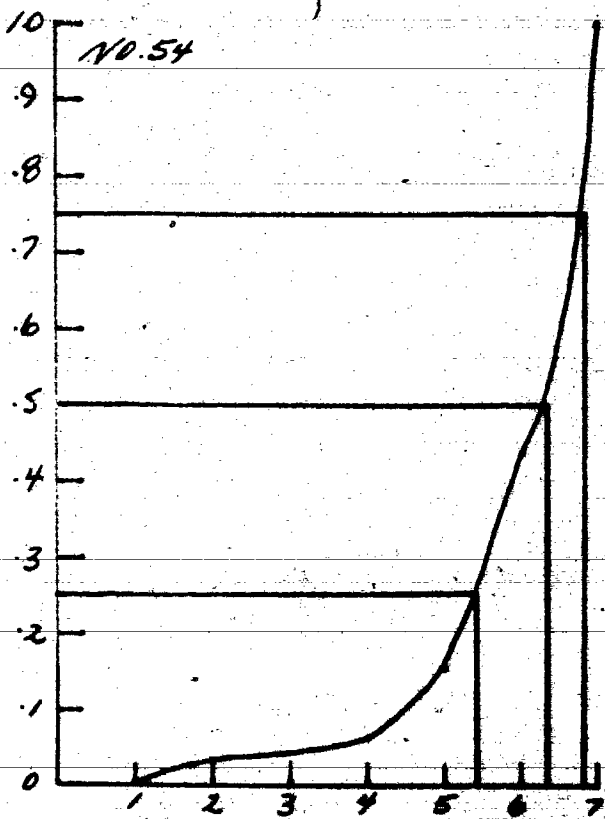
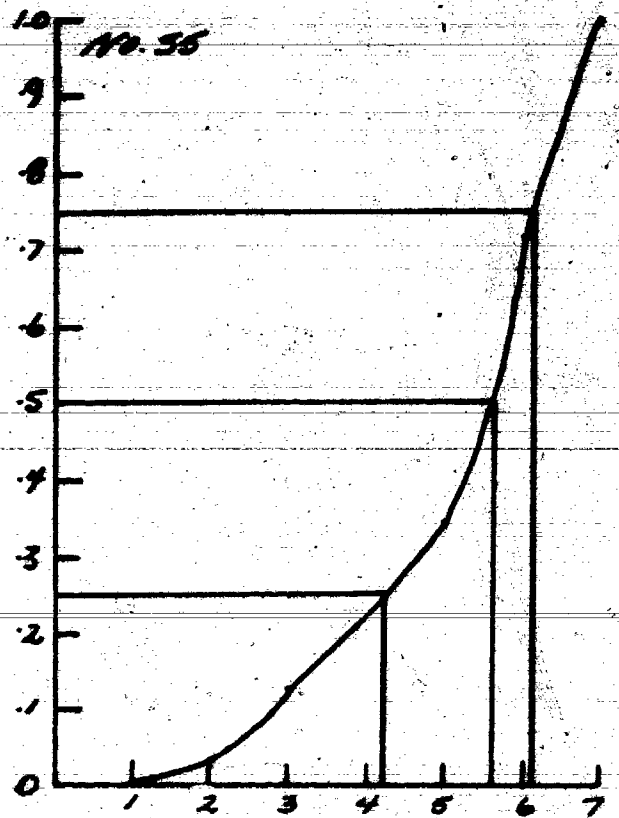
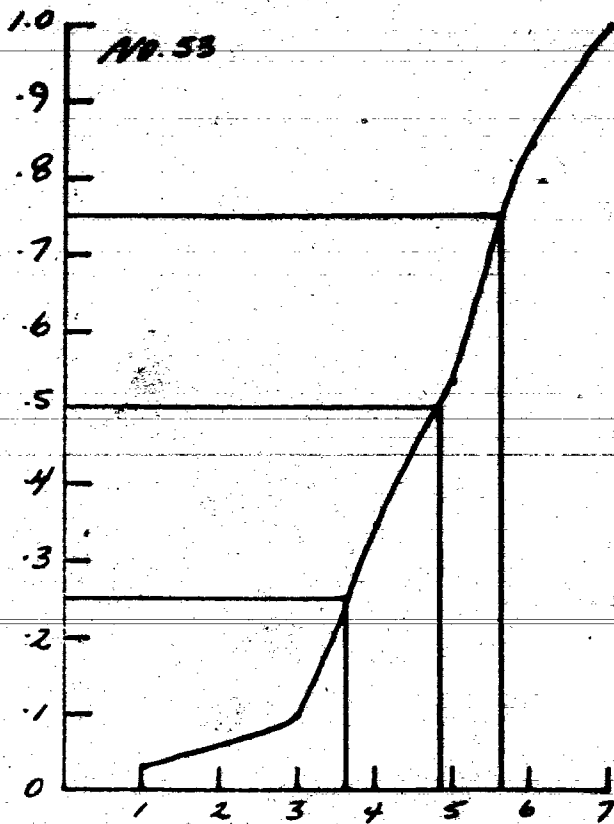


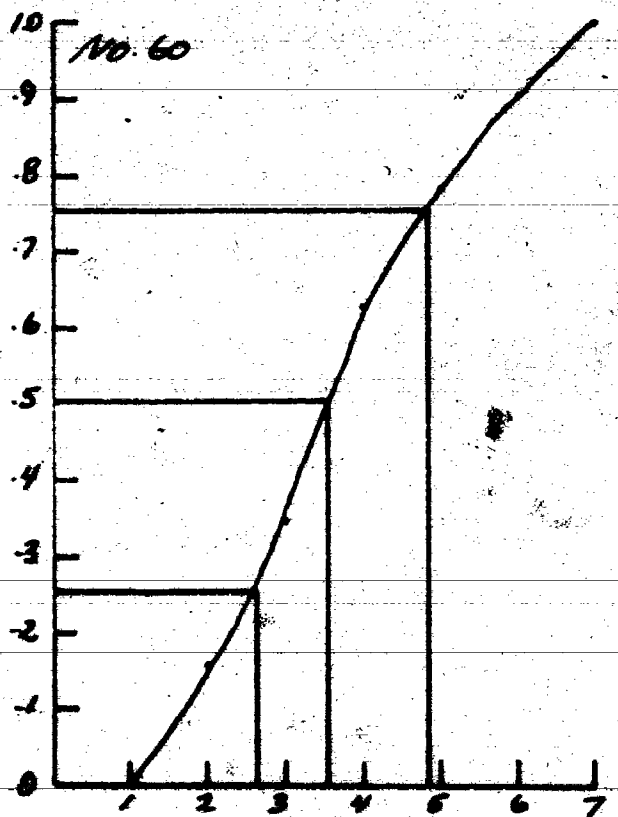
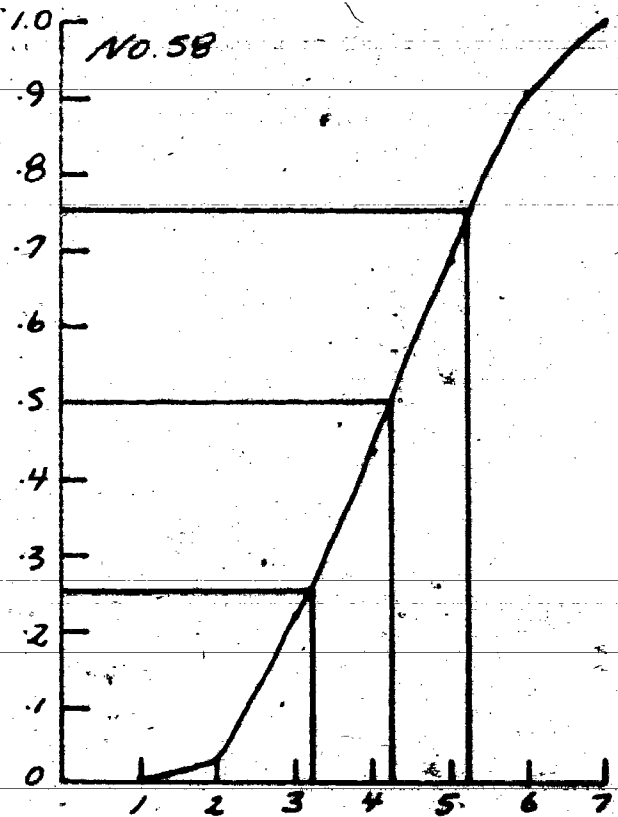
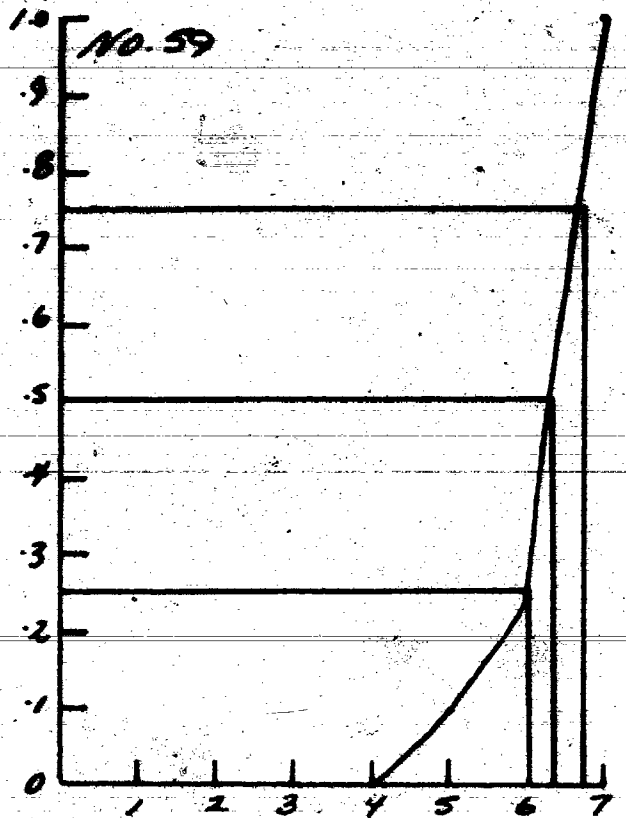
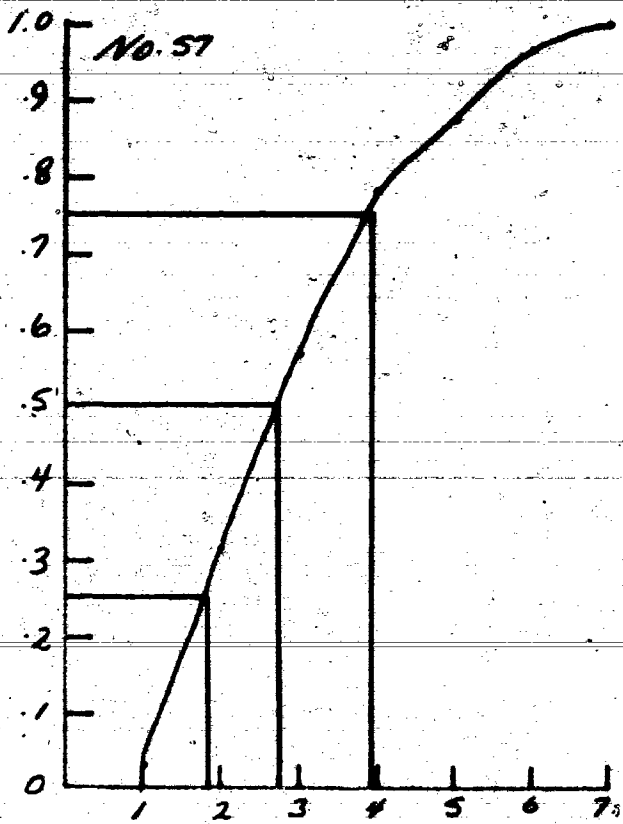


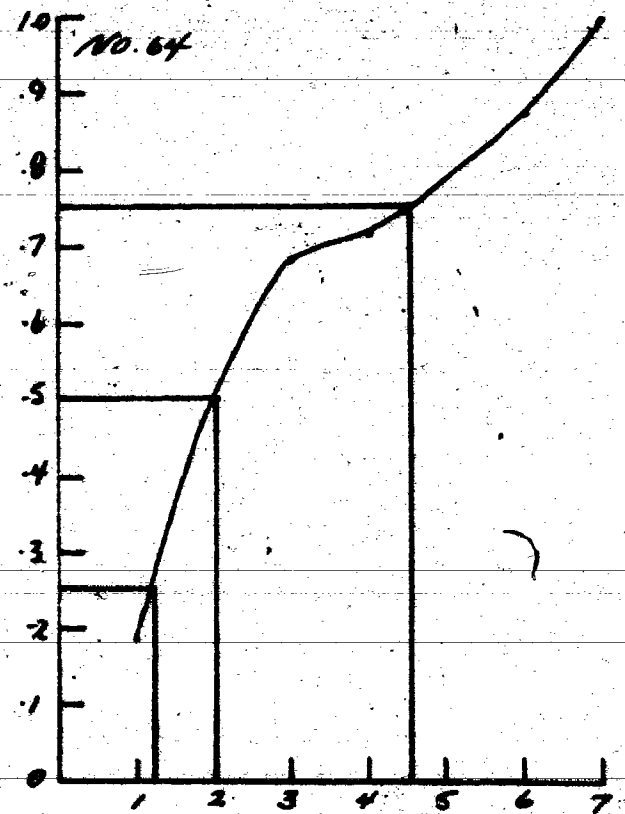
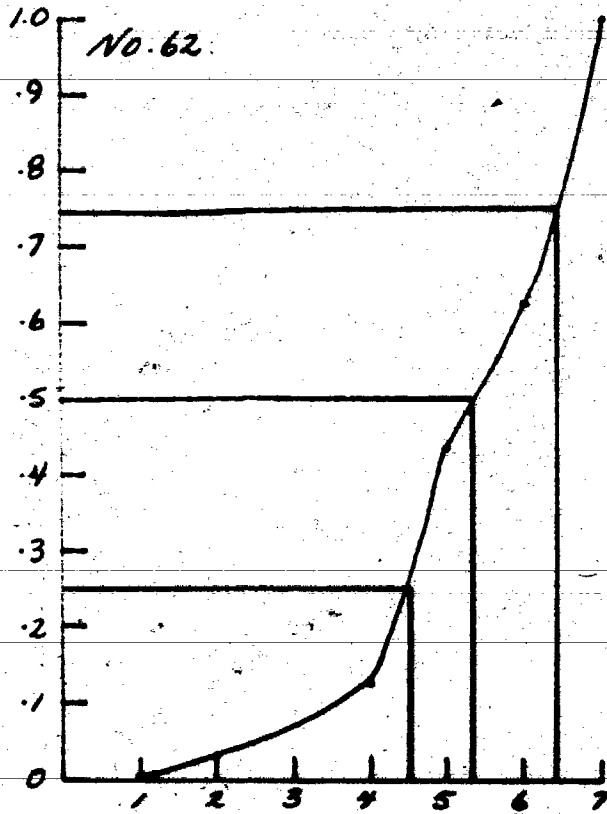
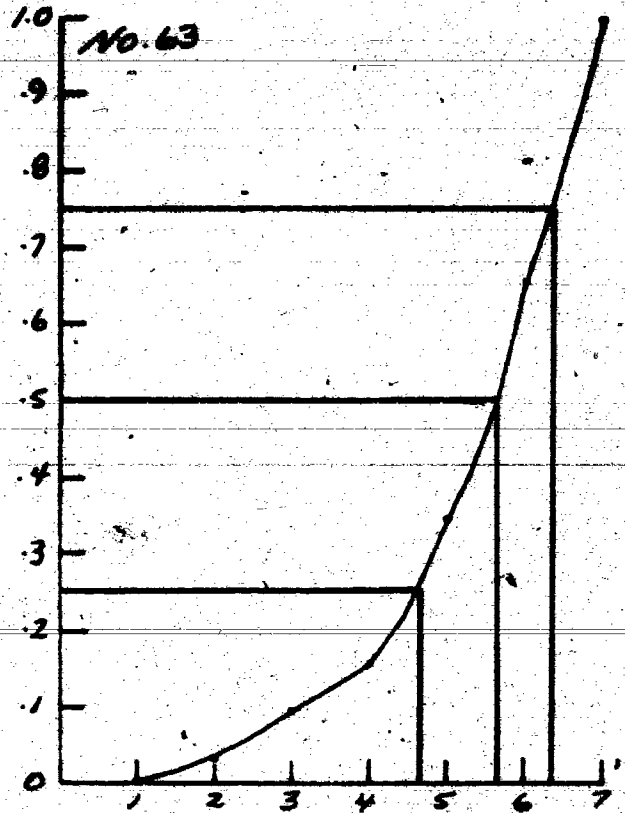
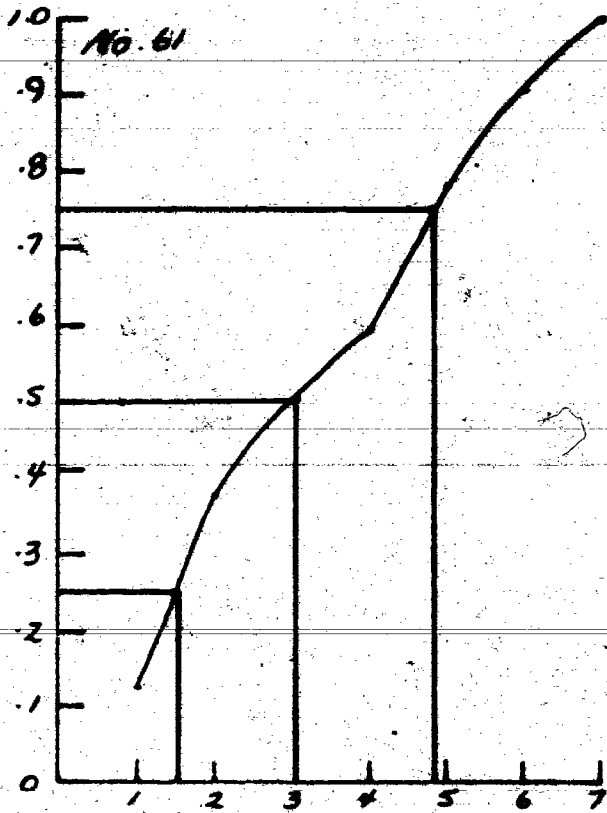


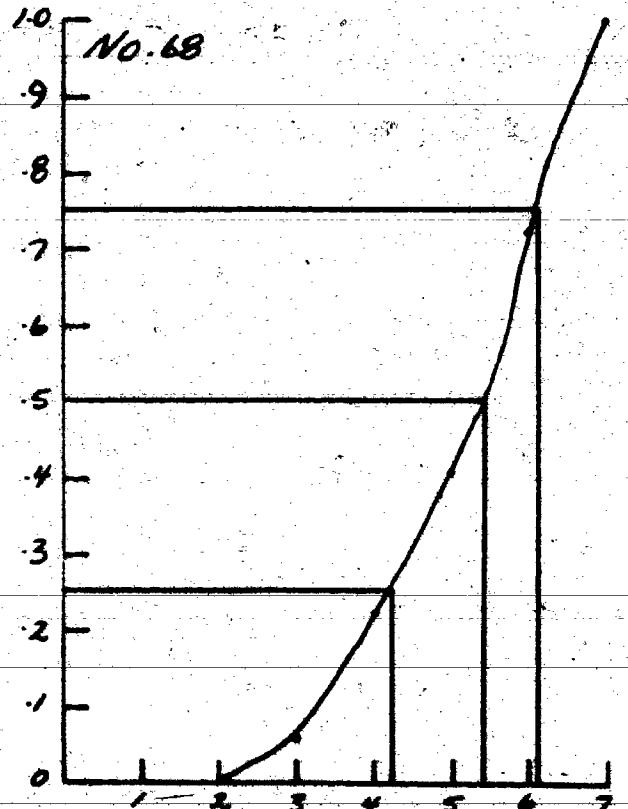
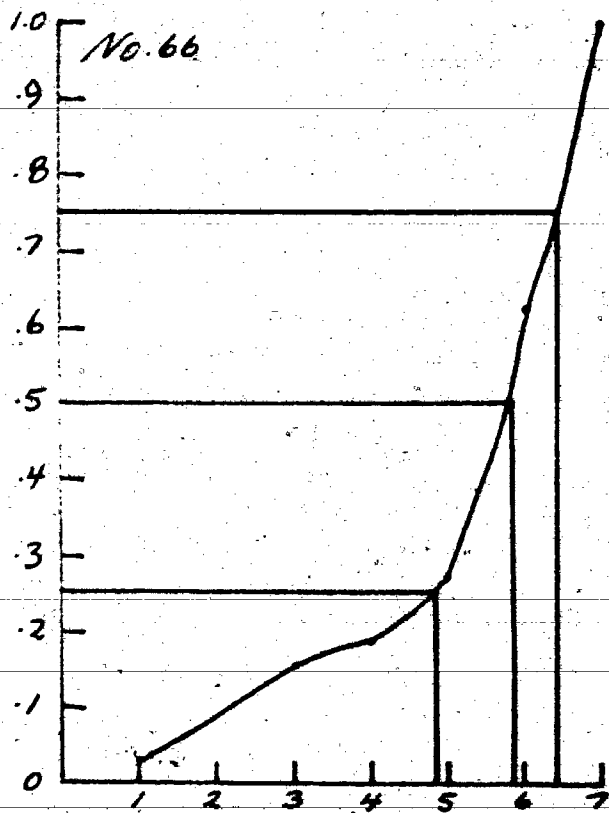
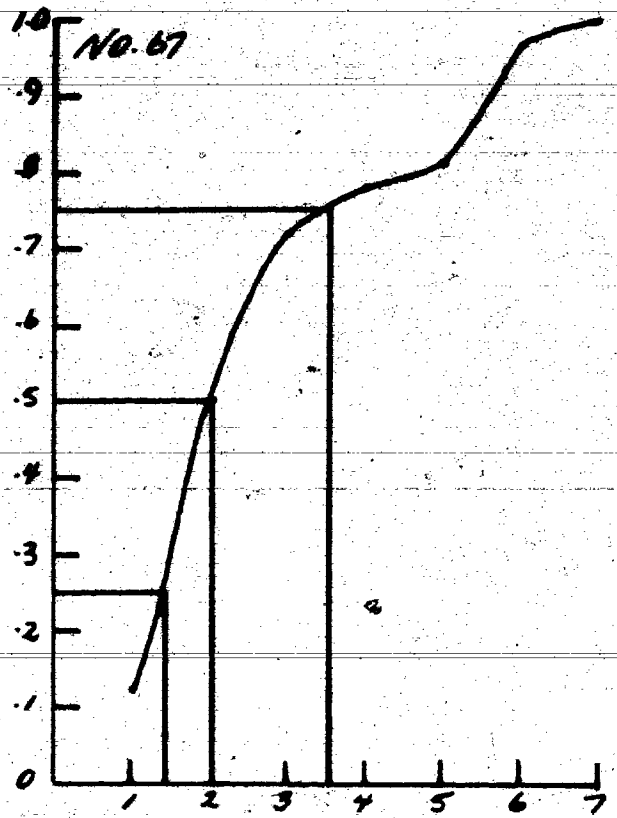
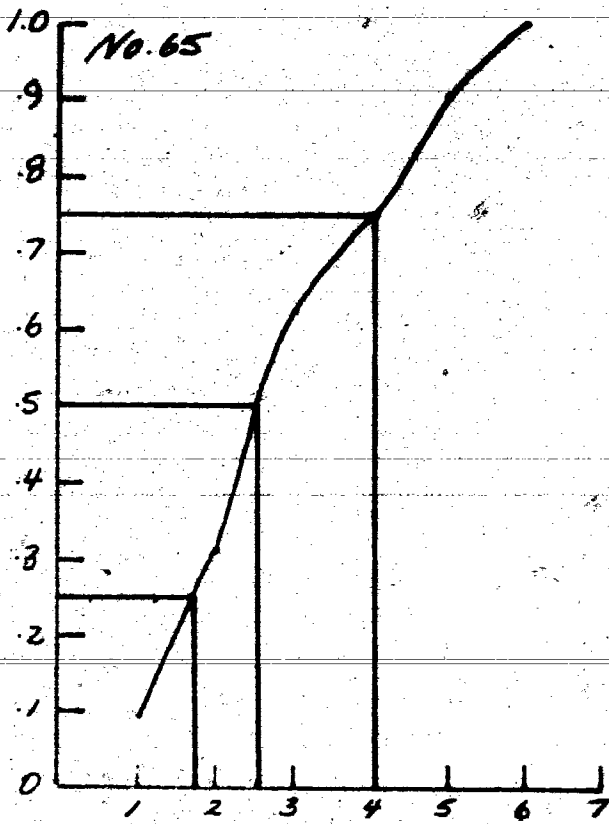


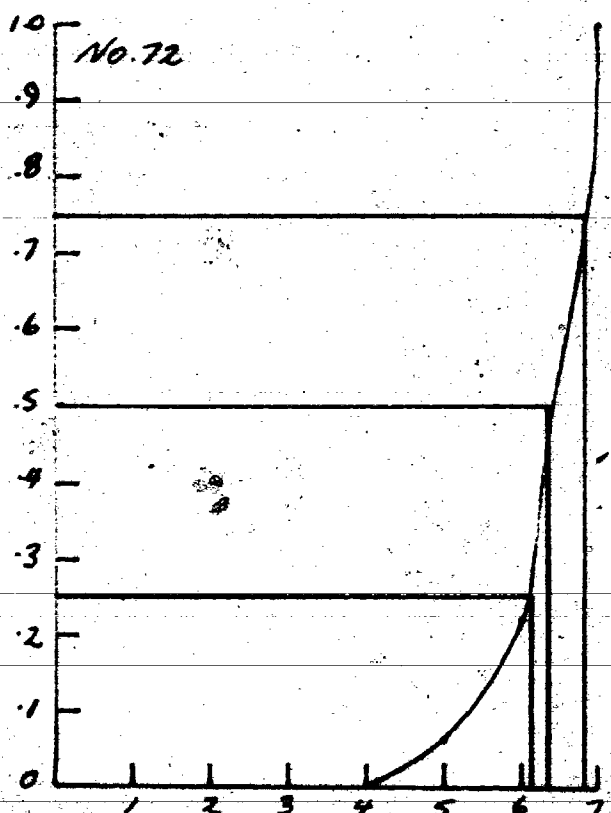
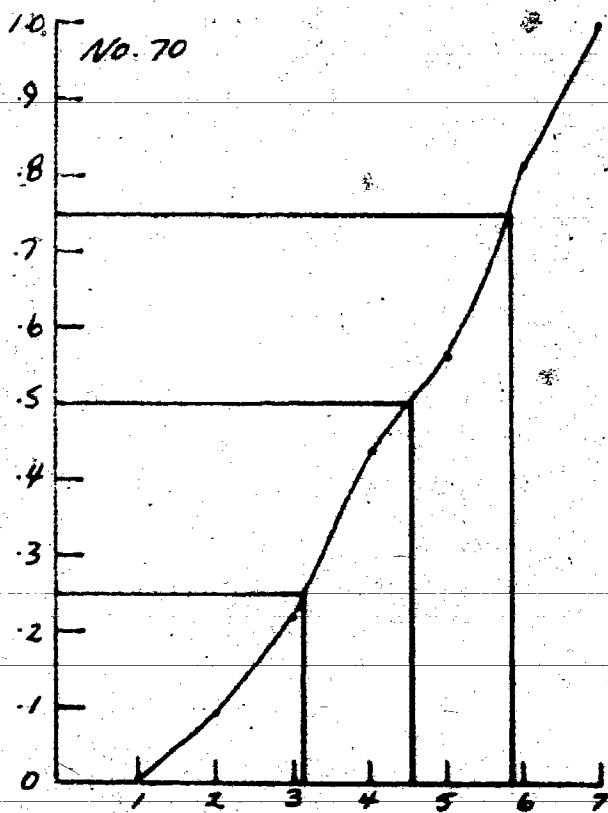
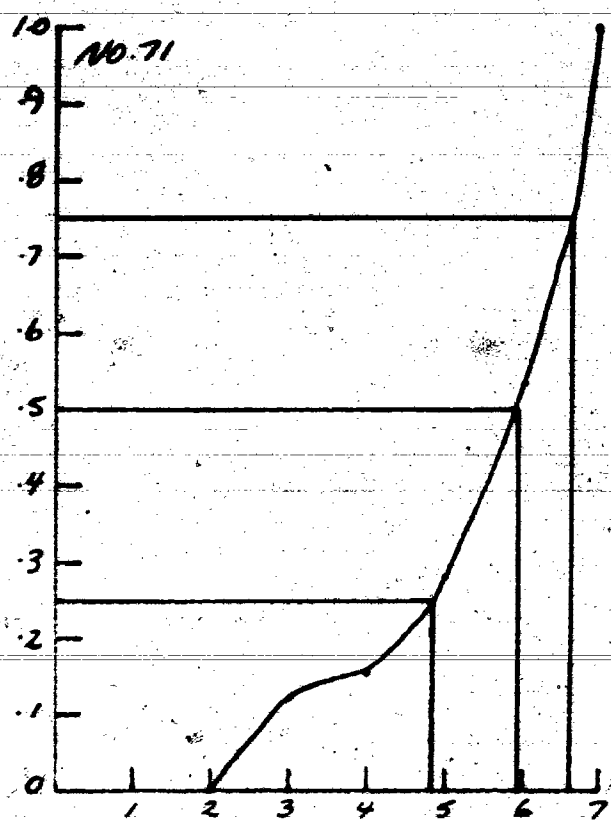
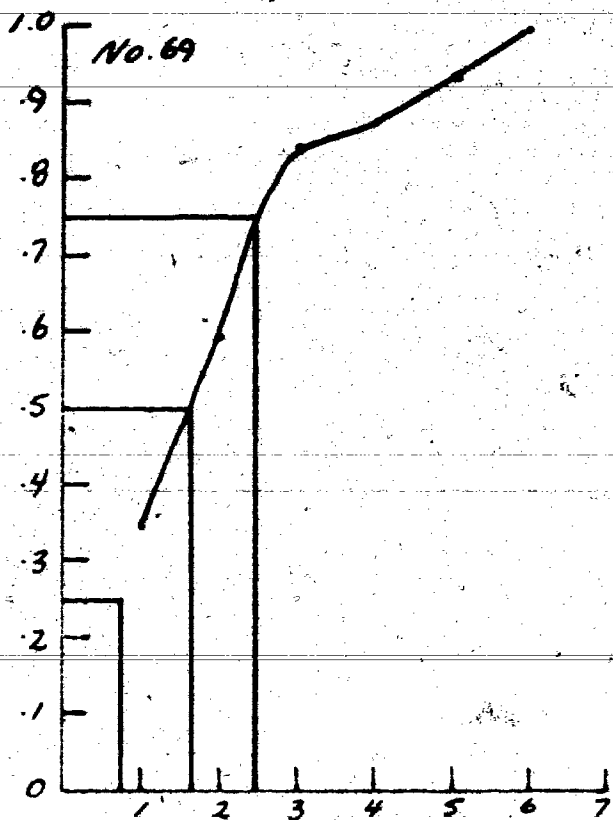


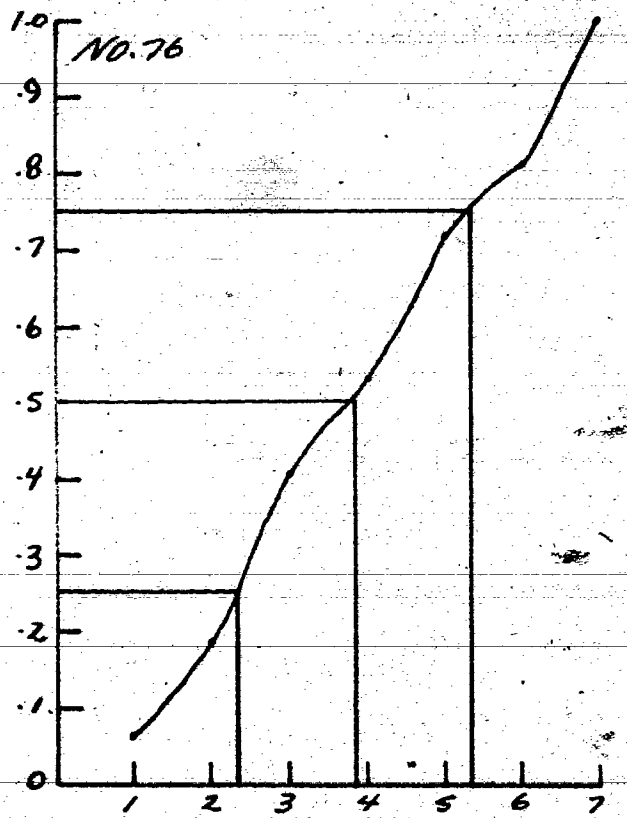
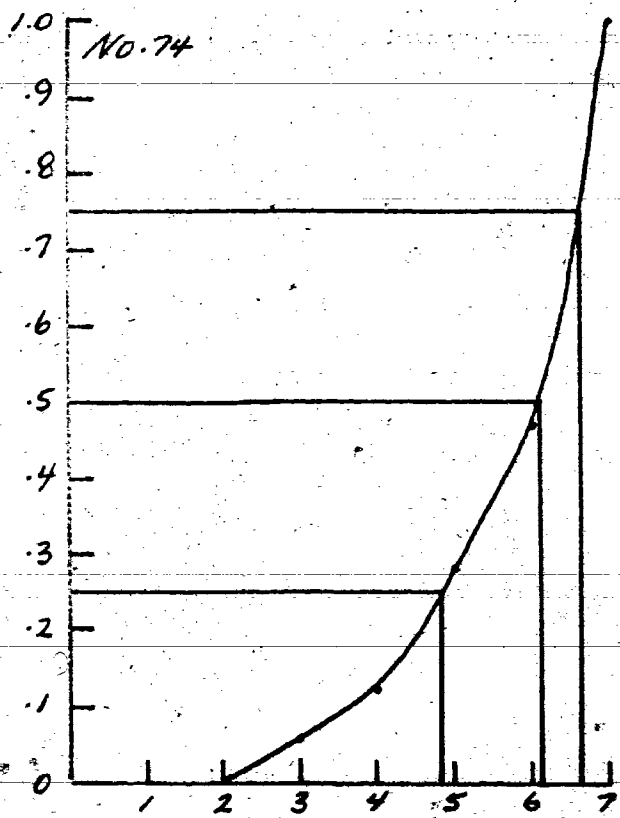
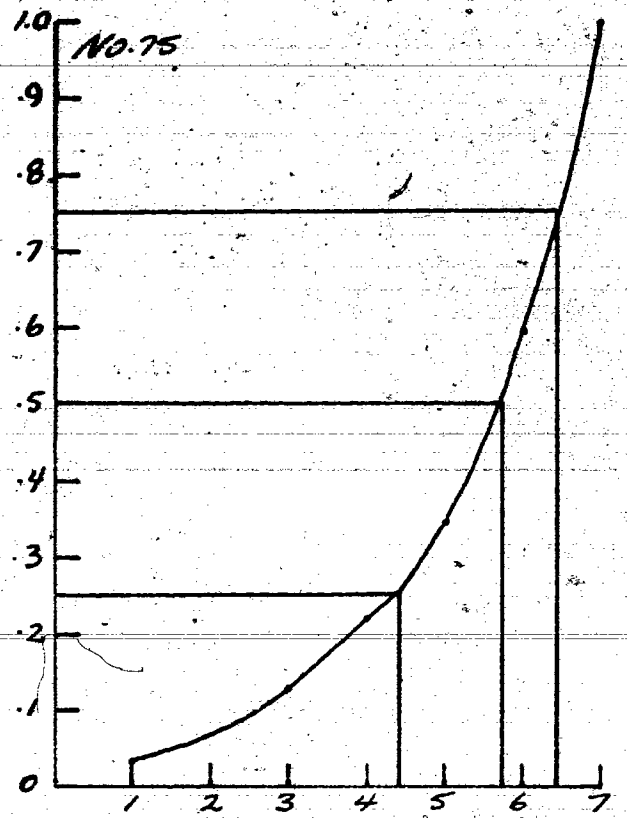
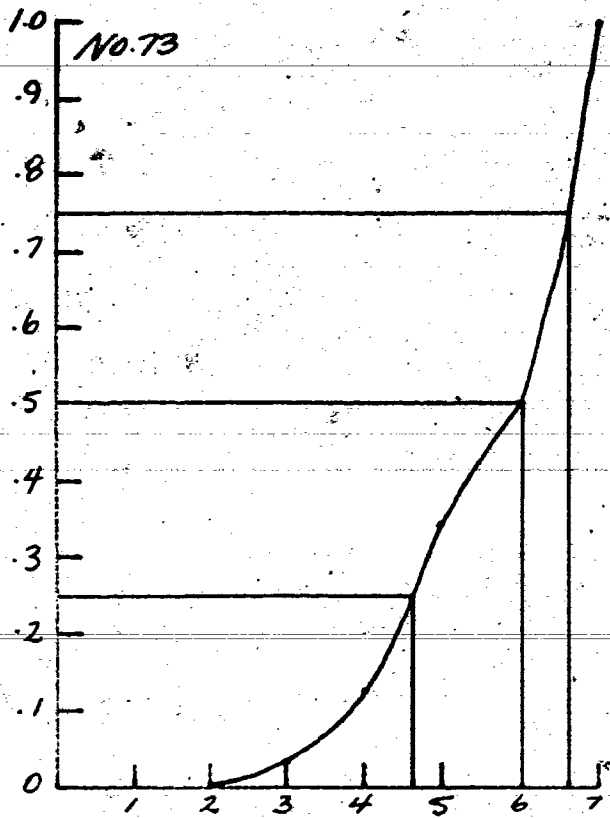


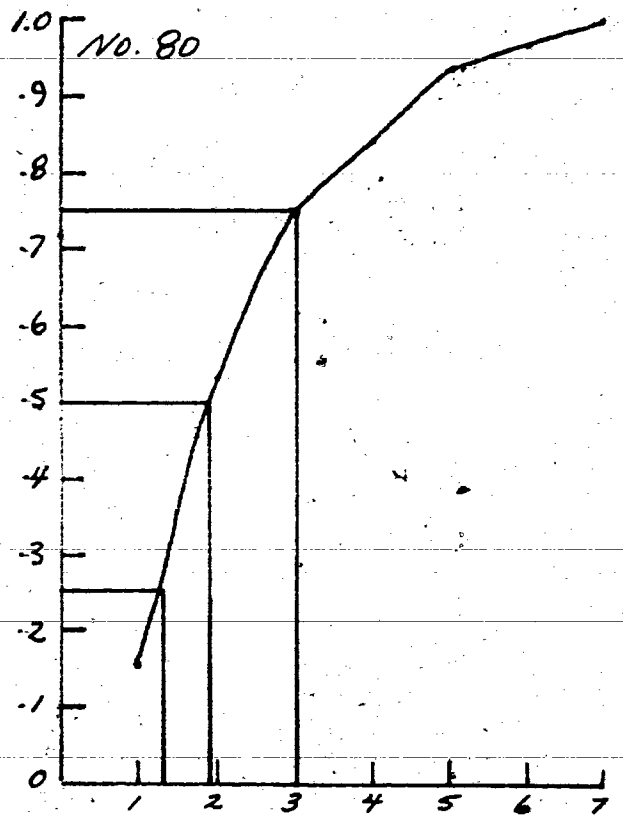
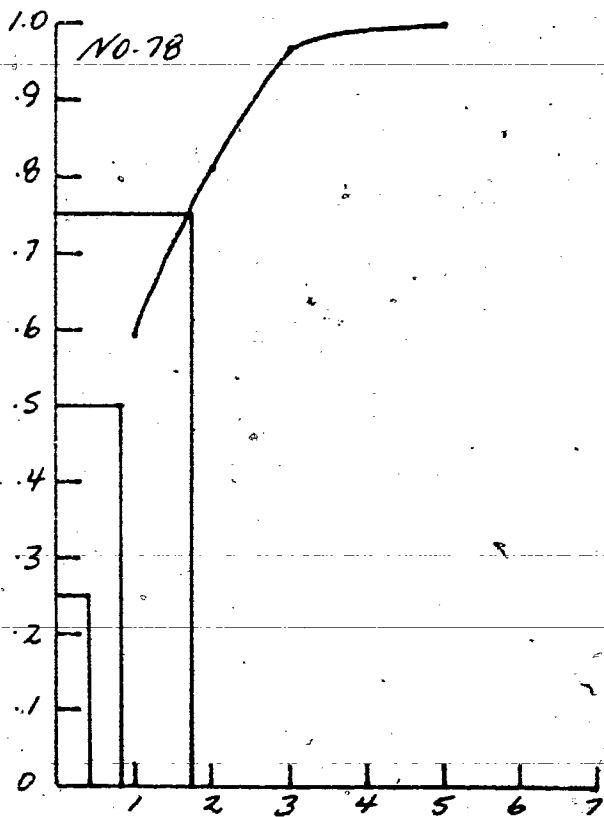
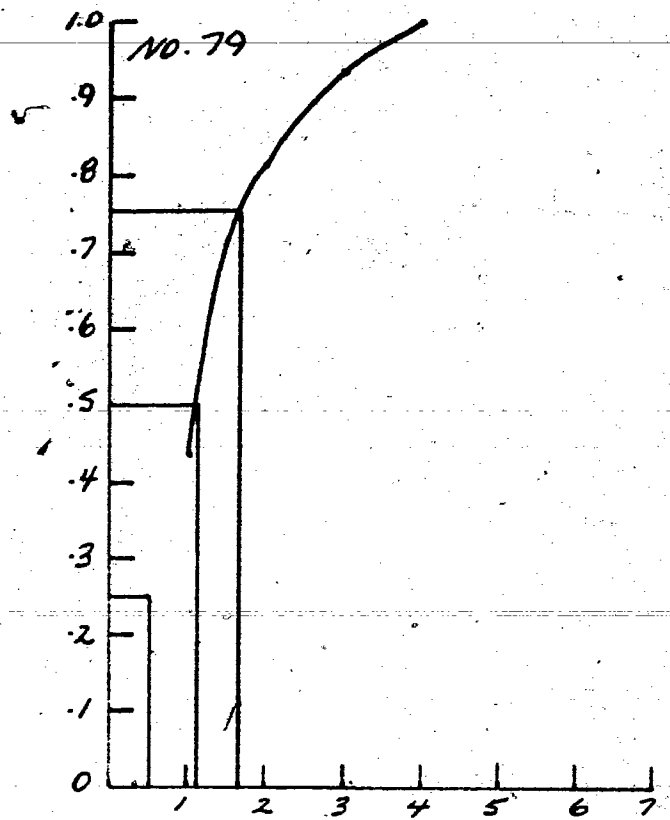
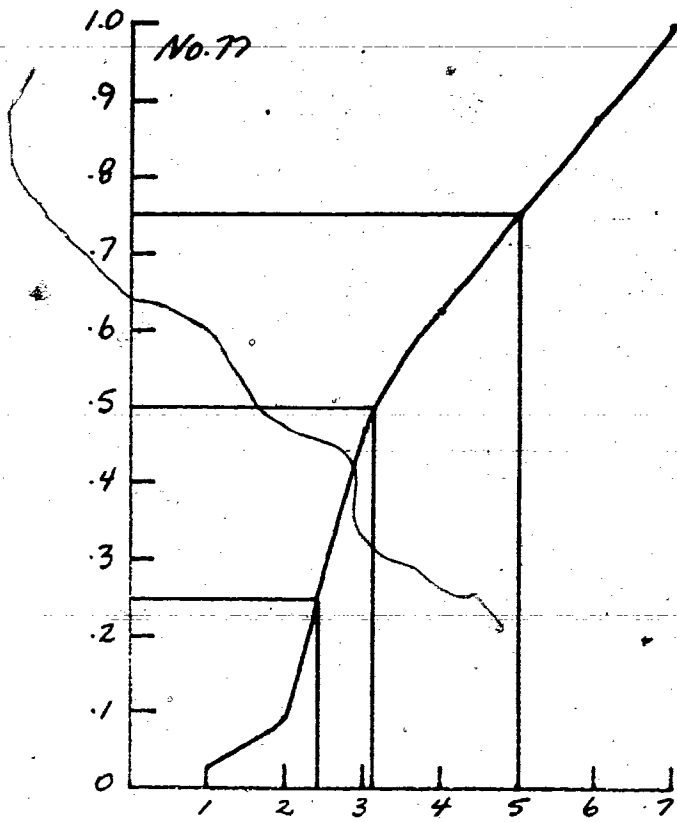


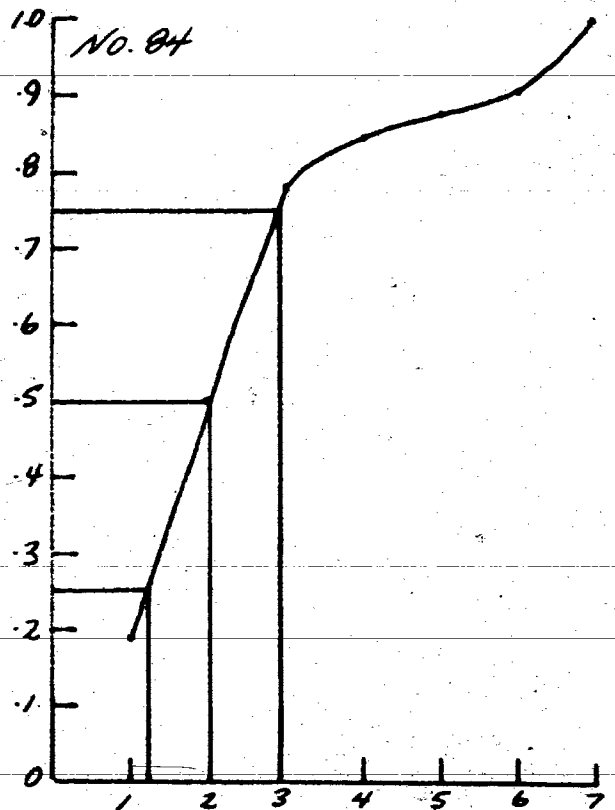
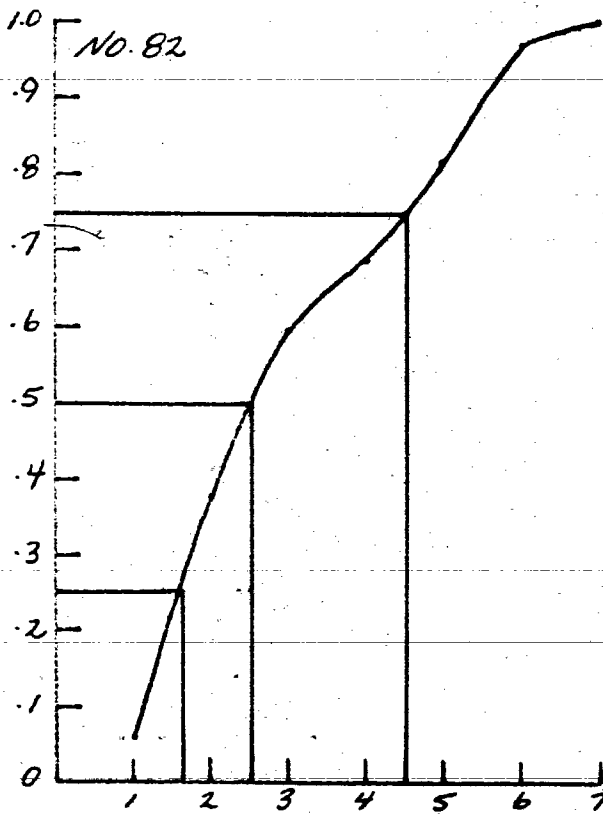
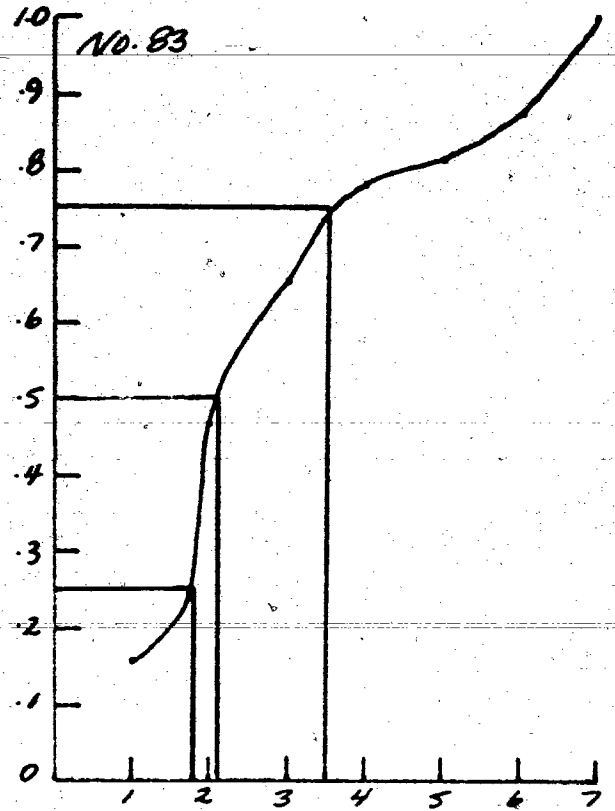
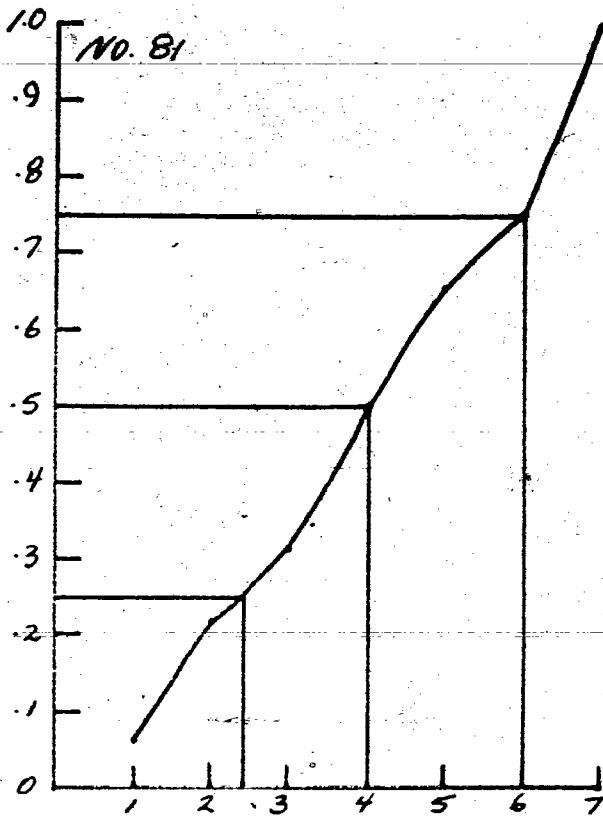


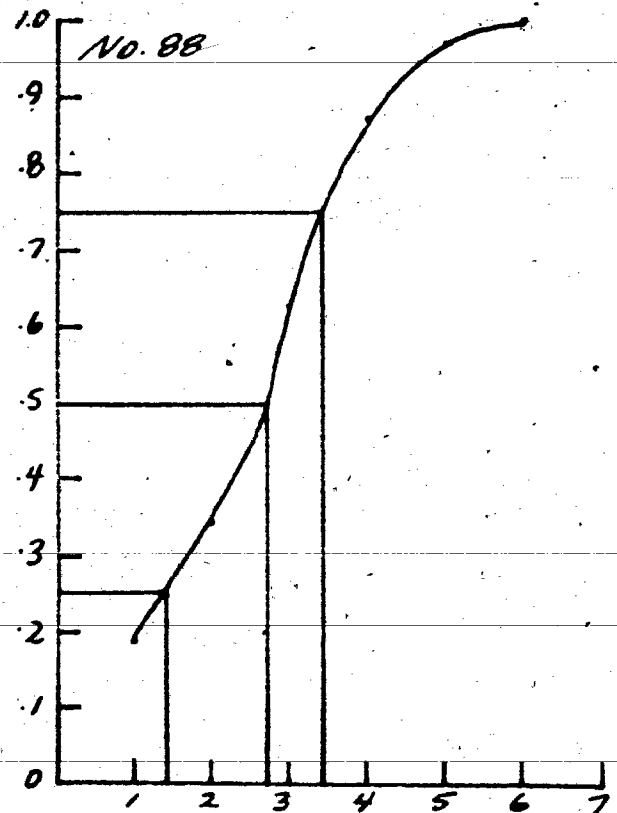
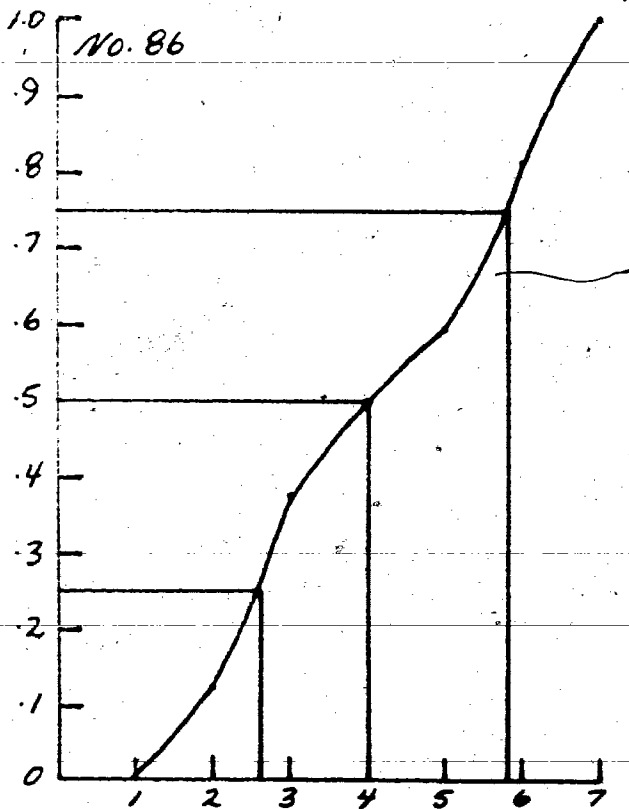
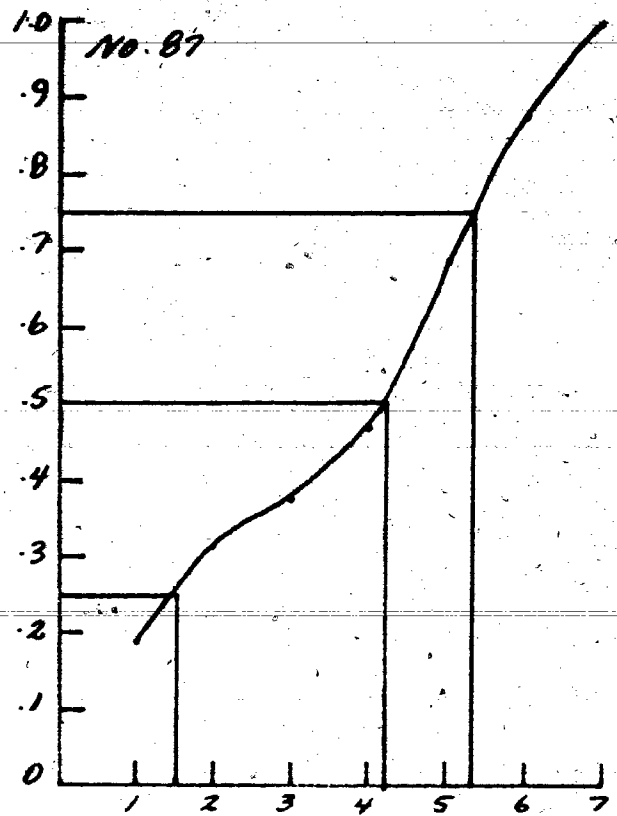
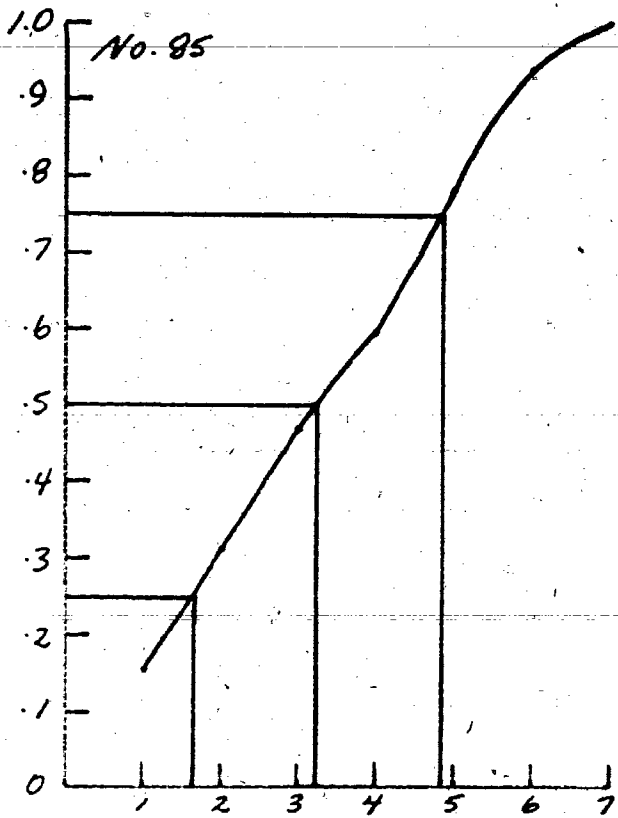


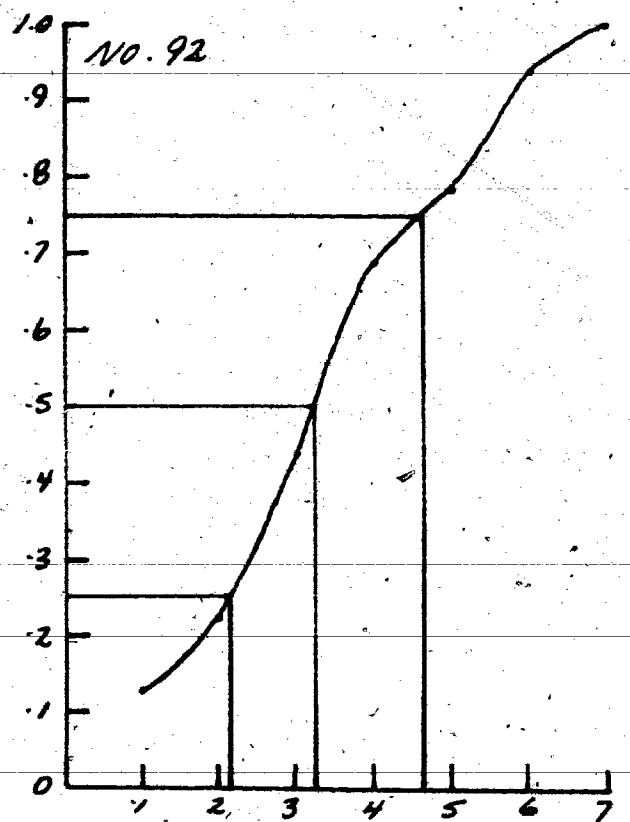
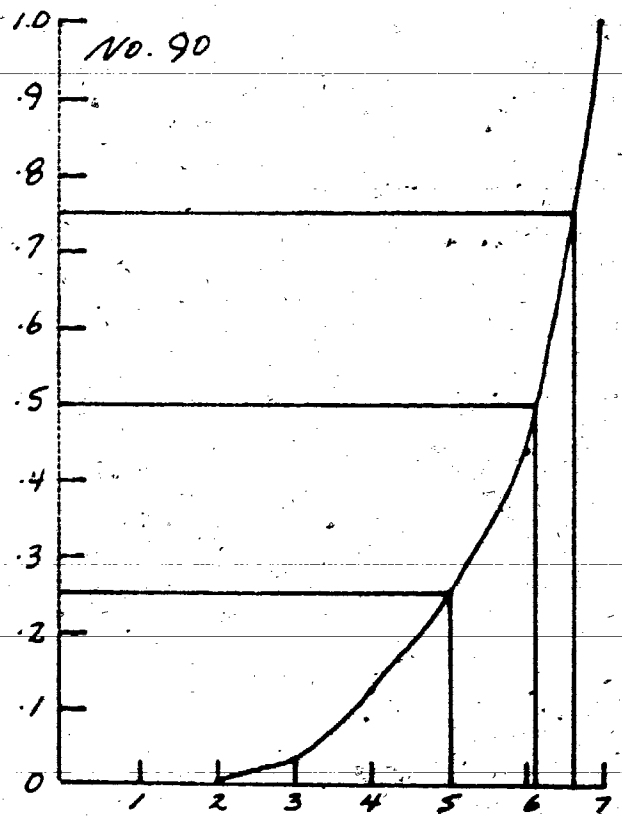
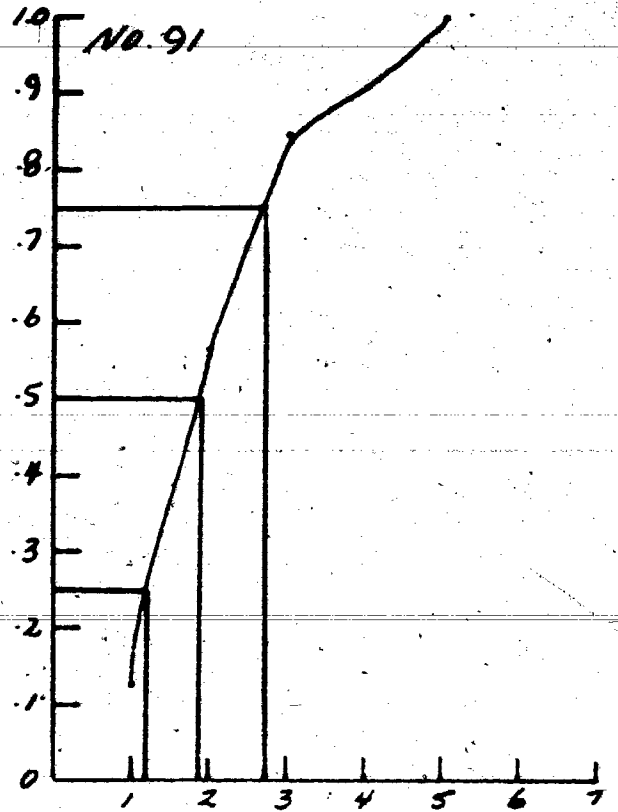
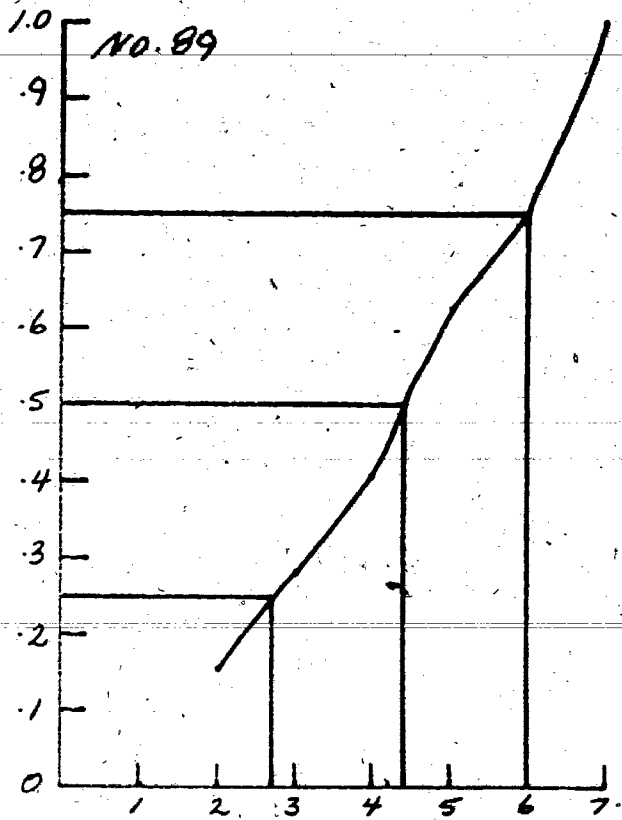


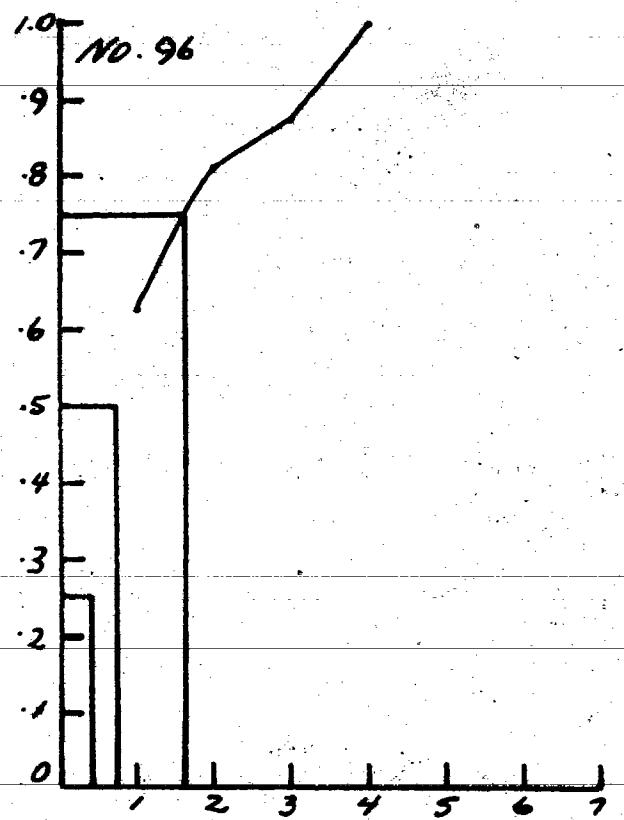
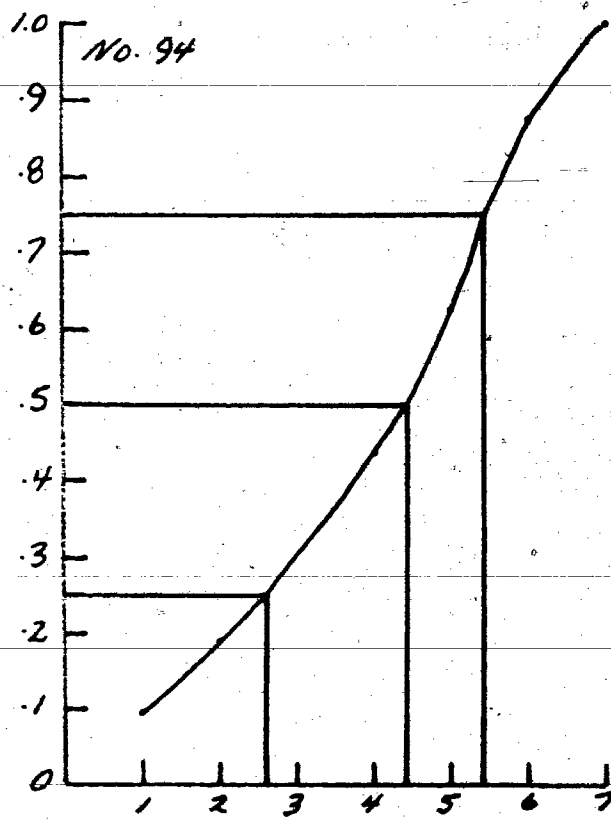
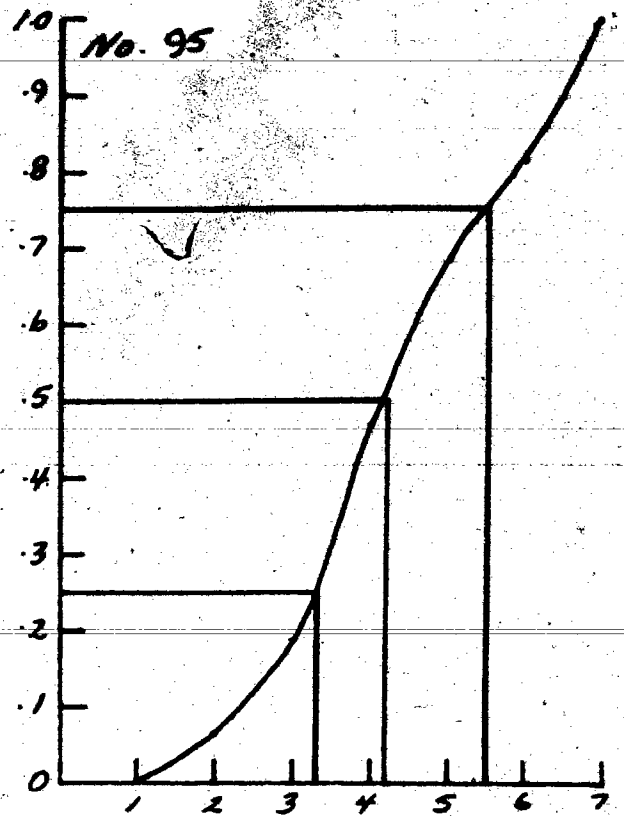
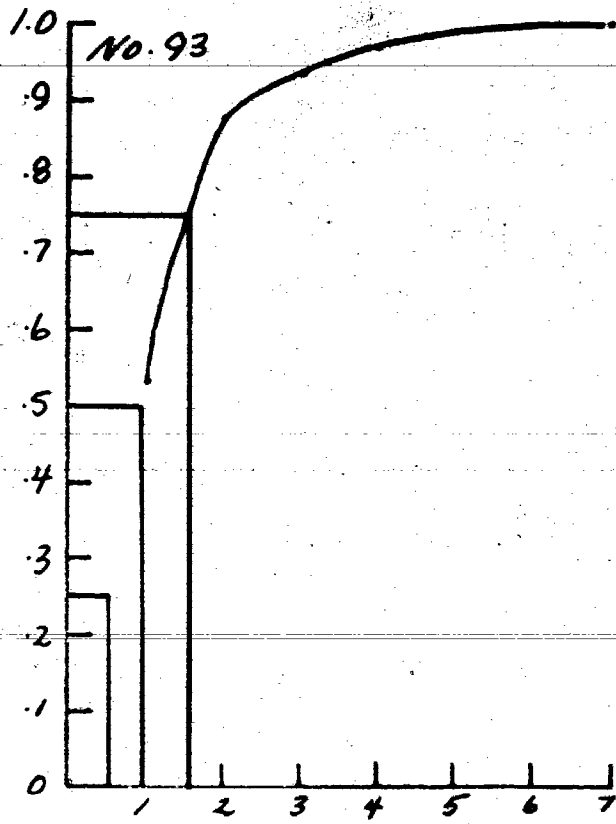


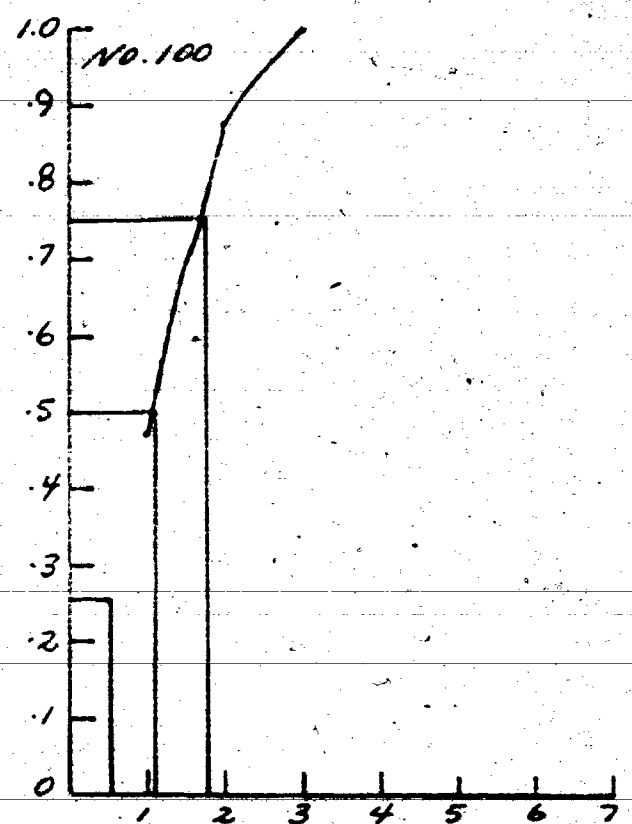
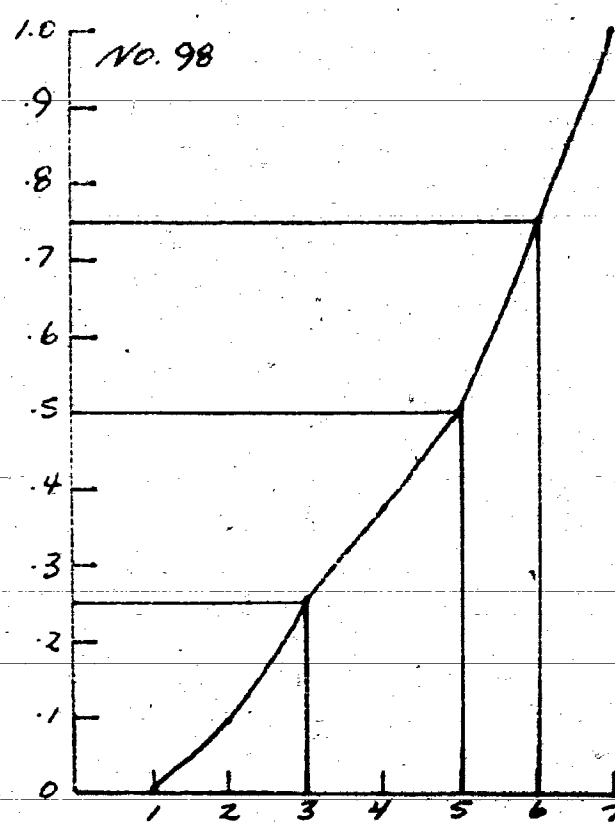
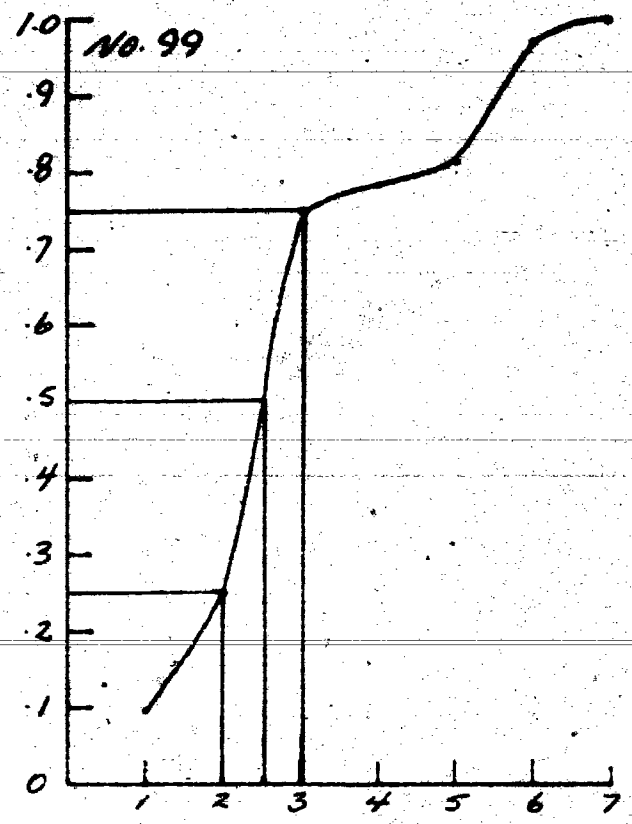
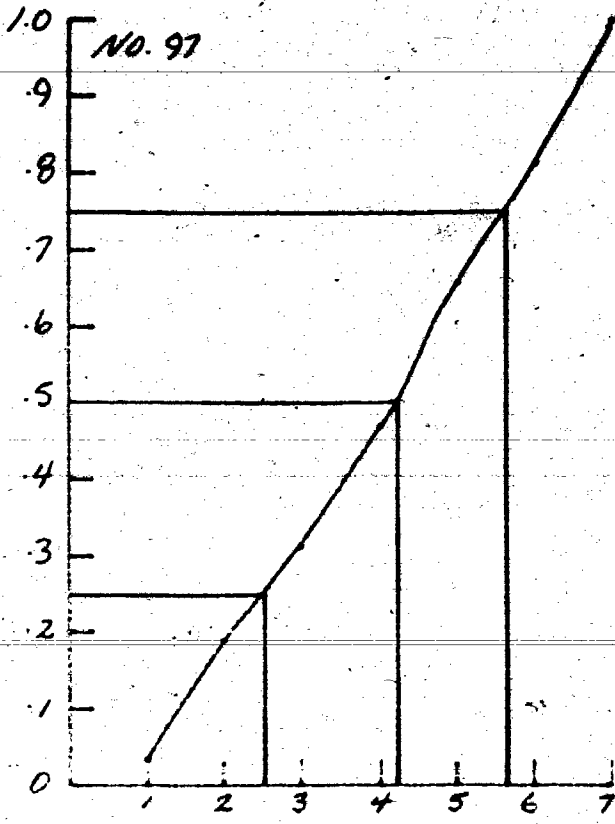


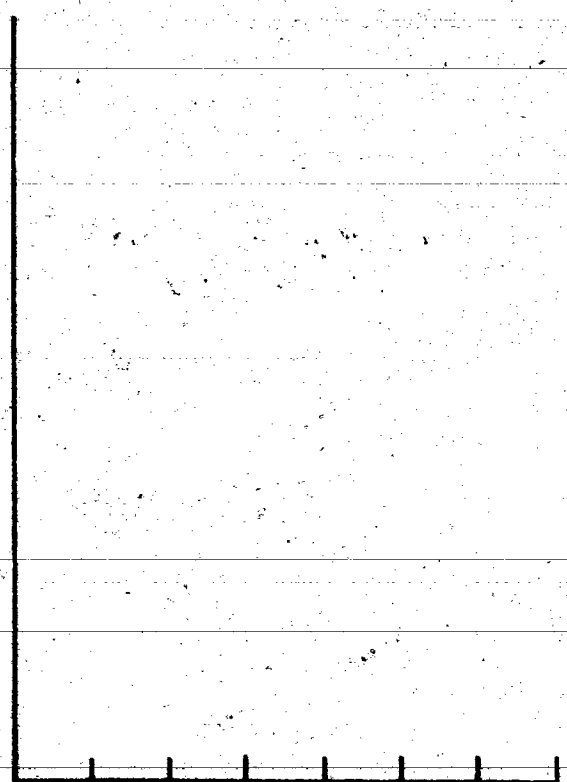
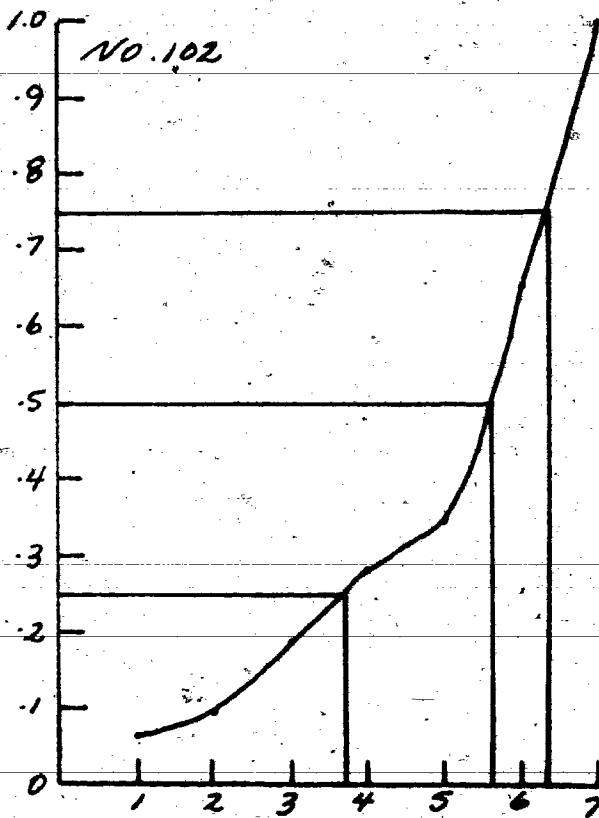
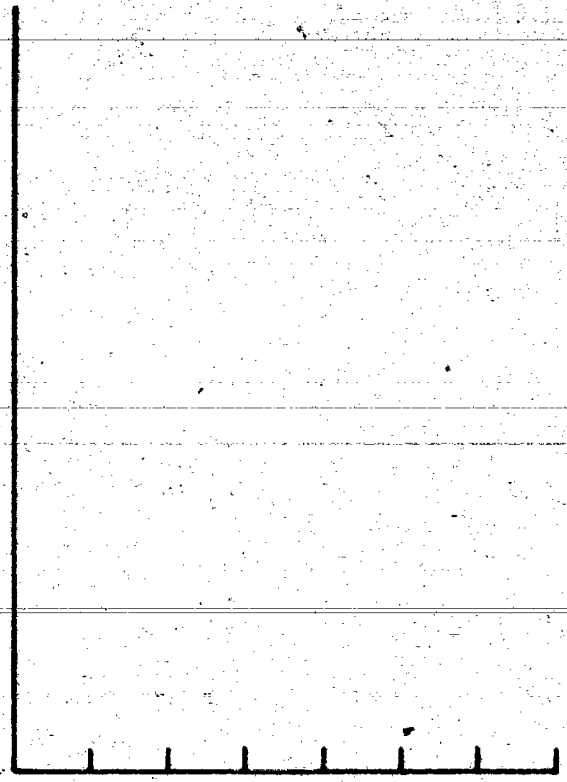
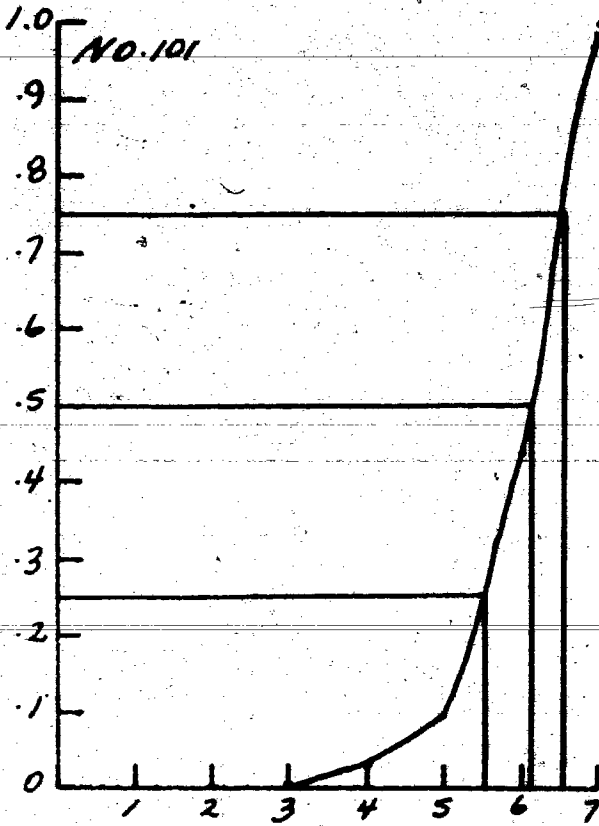






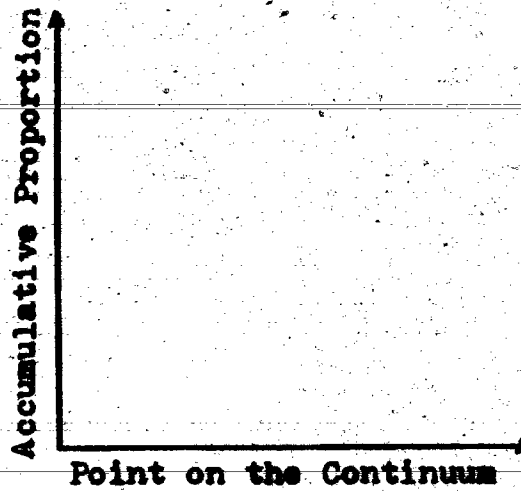




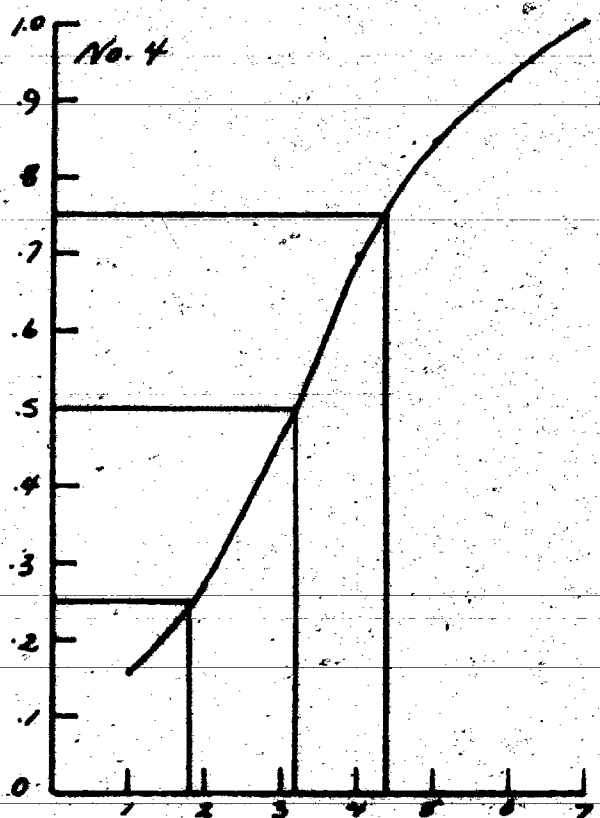
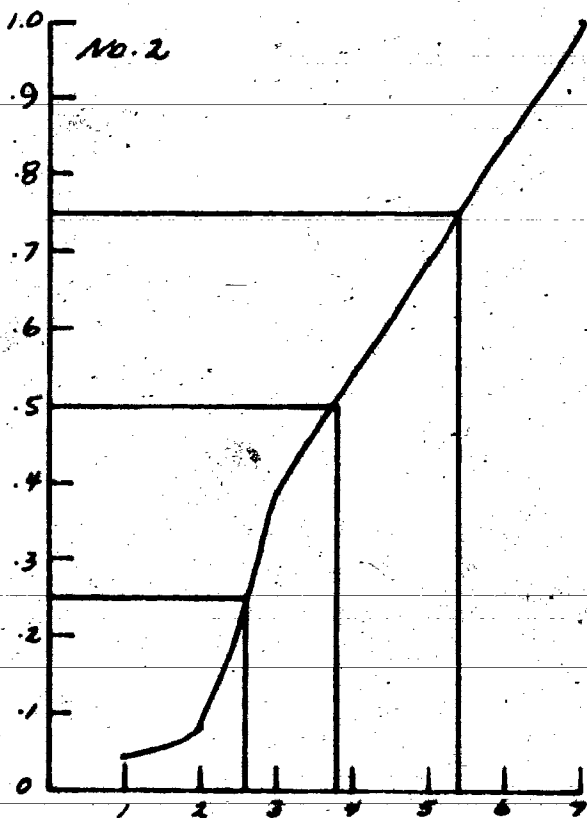
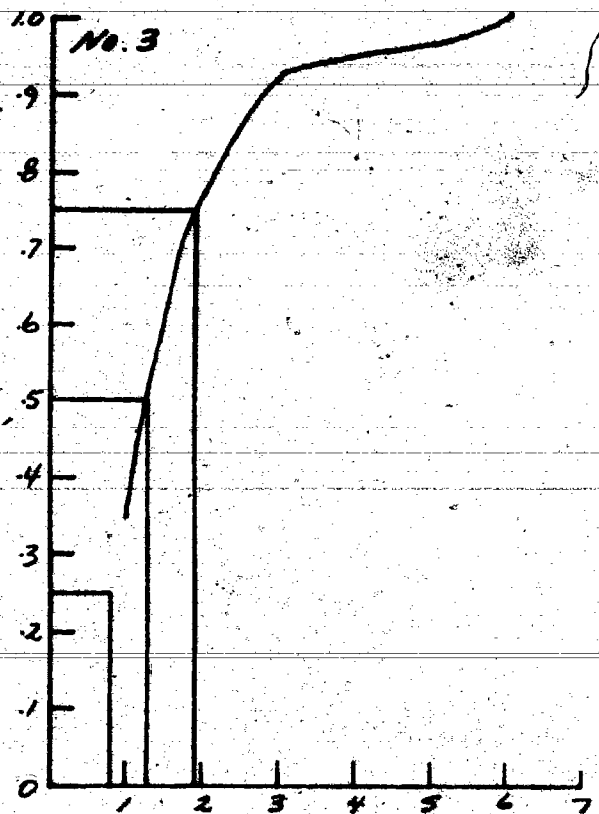
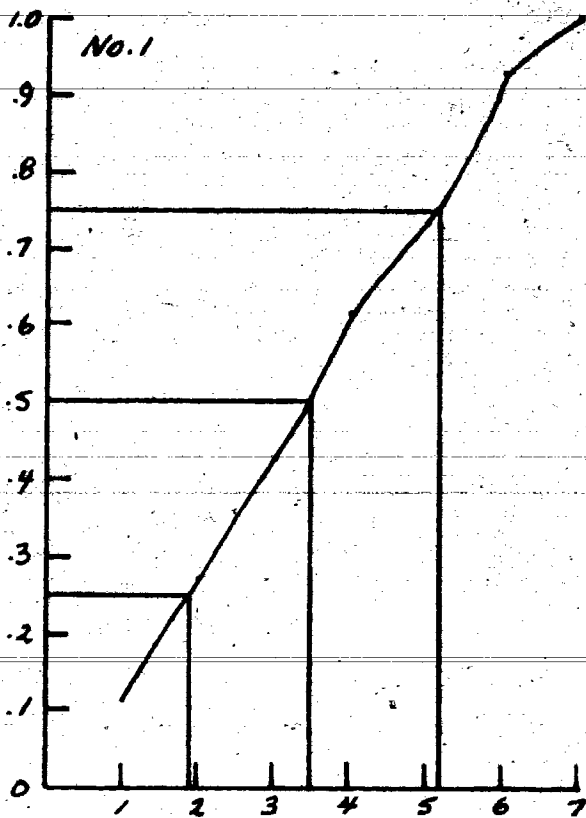


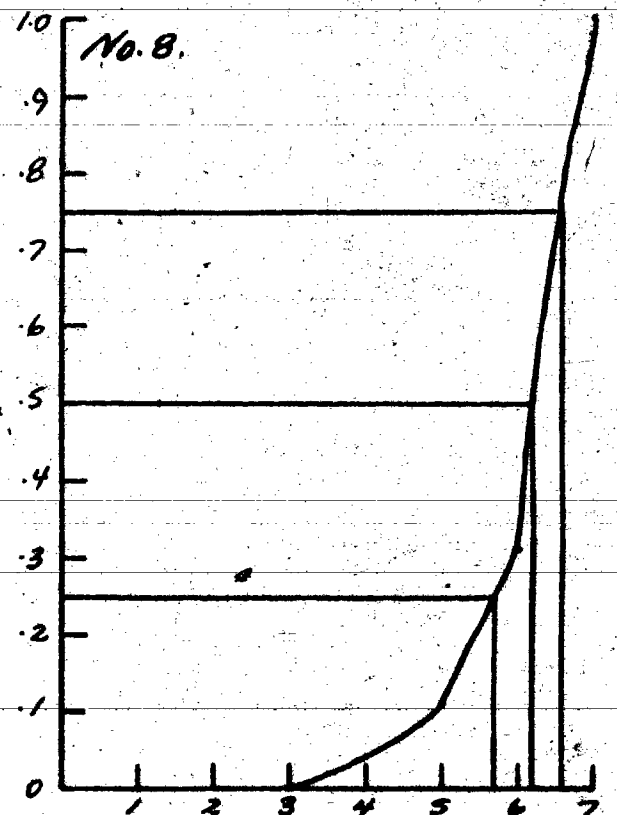
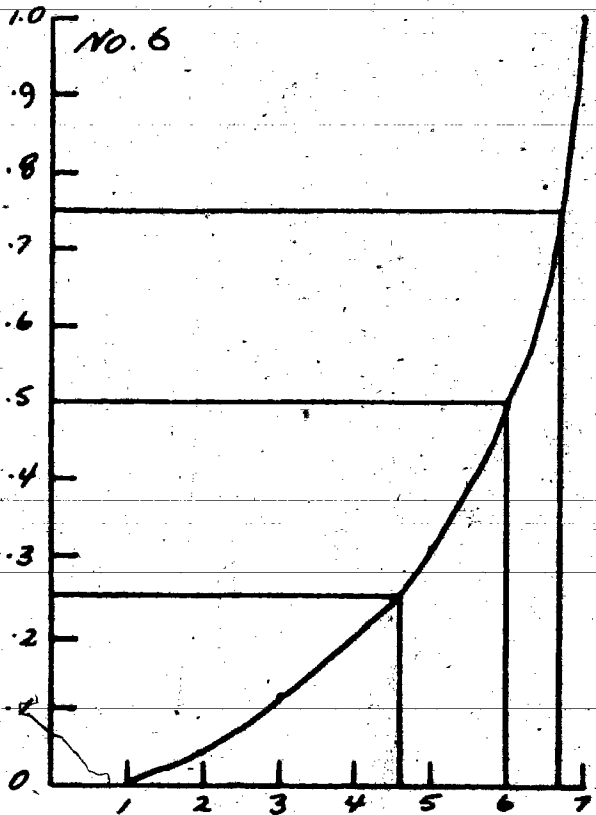
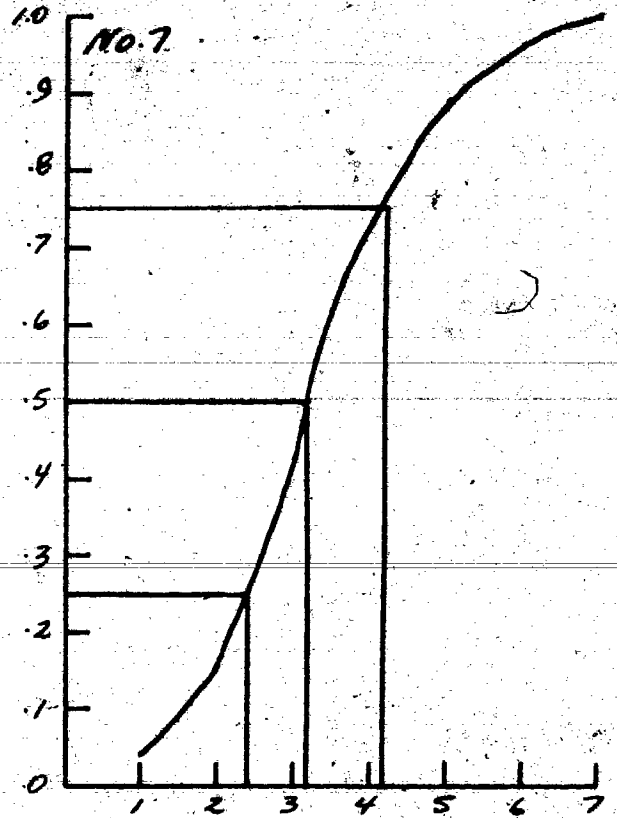
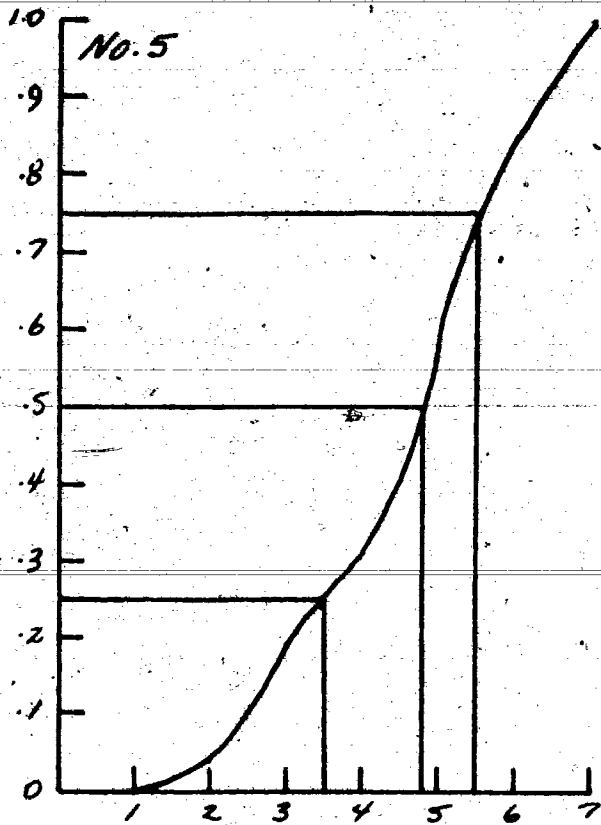
APPENDIX K

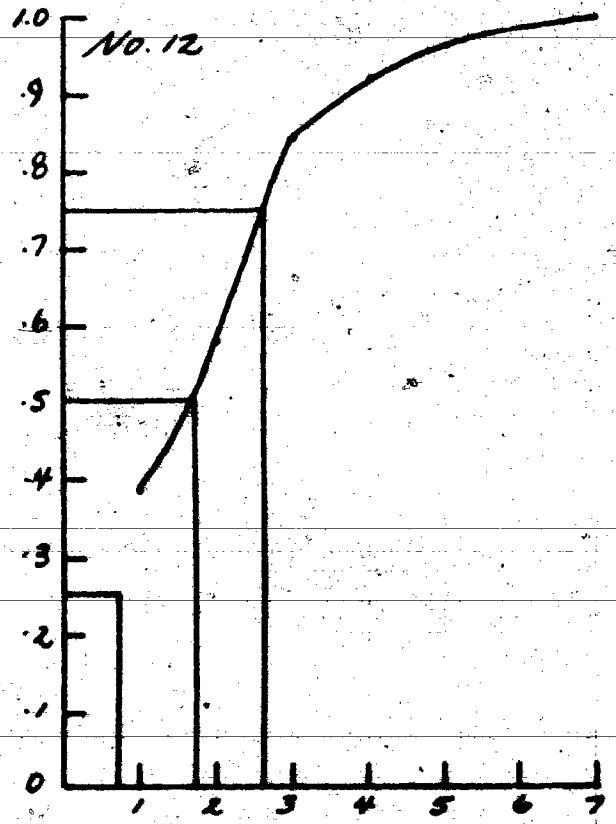
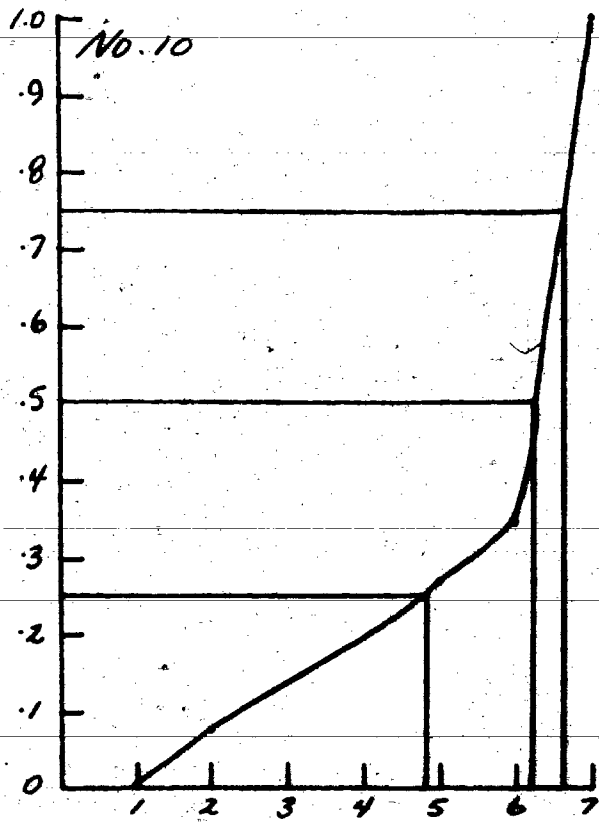
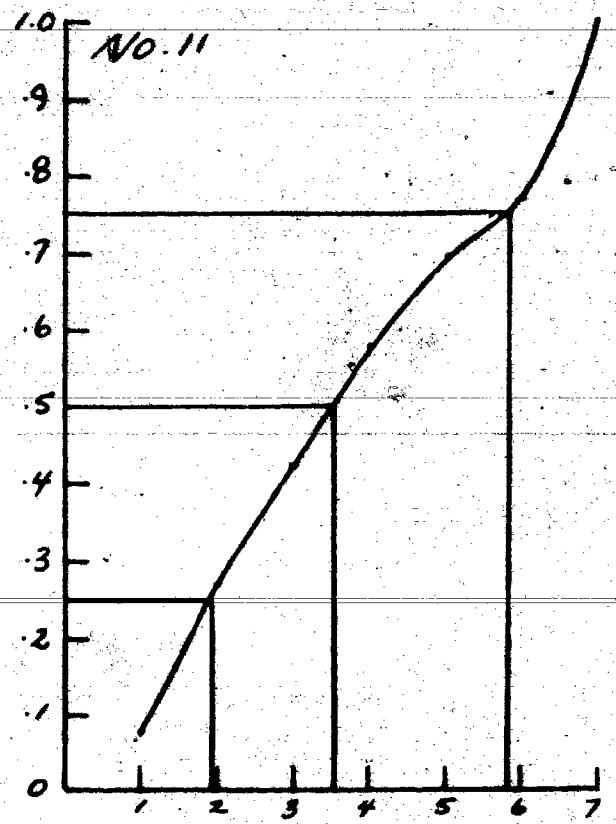
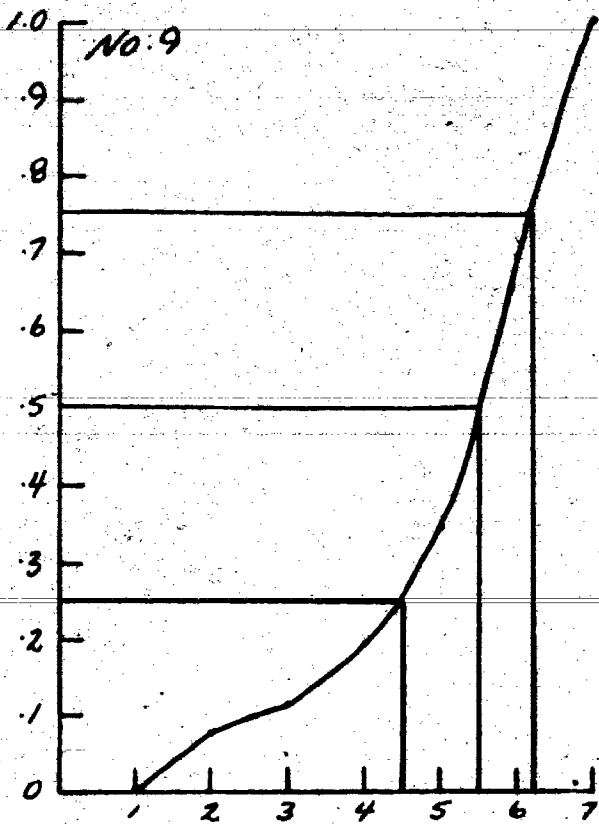
Phase III Graphs of Accumulative Proportions:
The Adjusted Sample

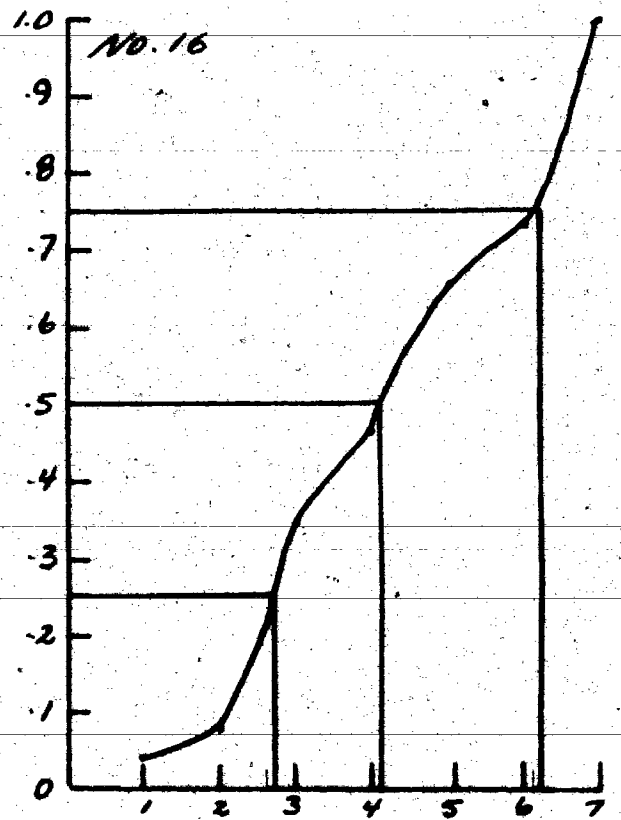
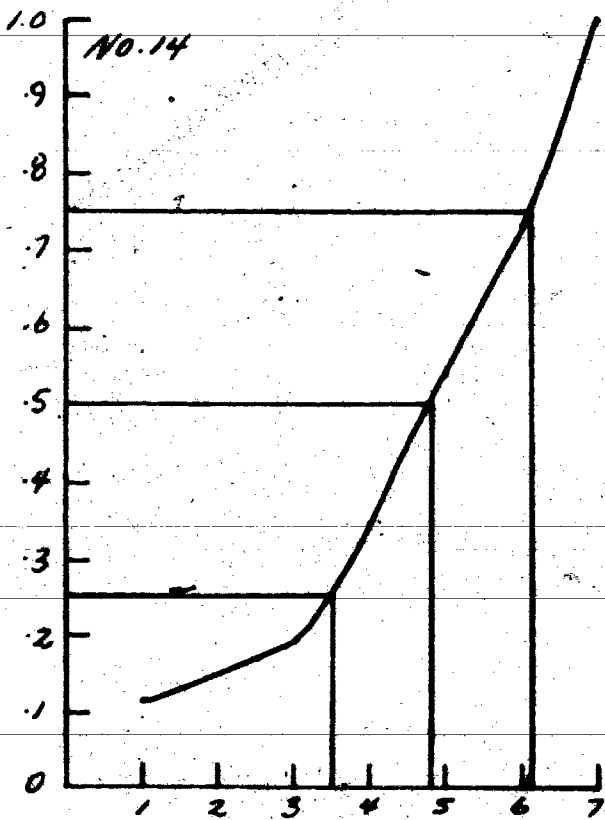
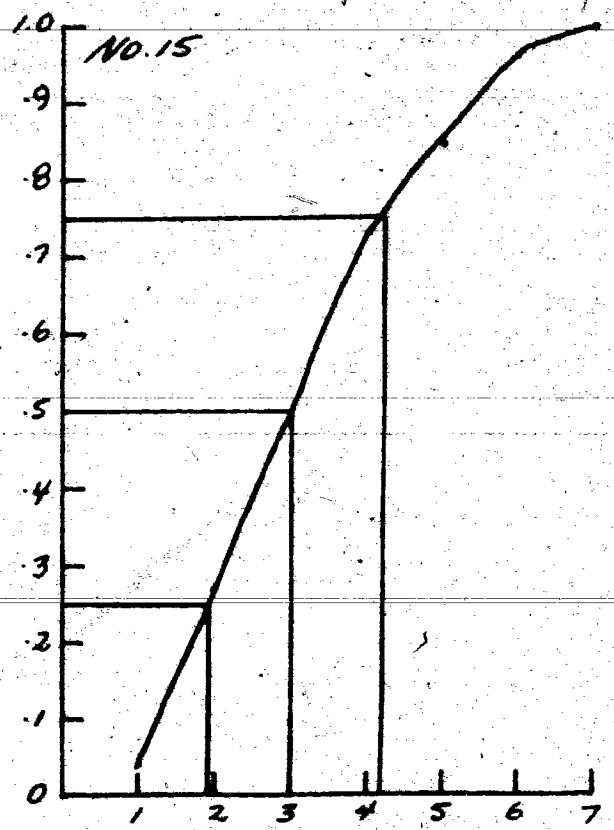
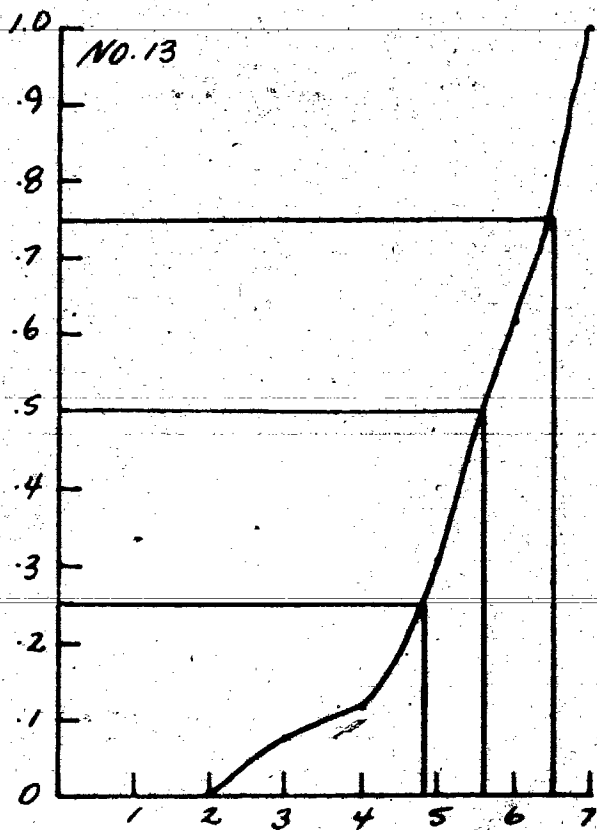


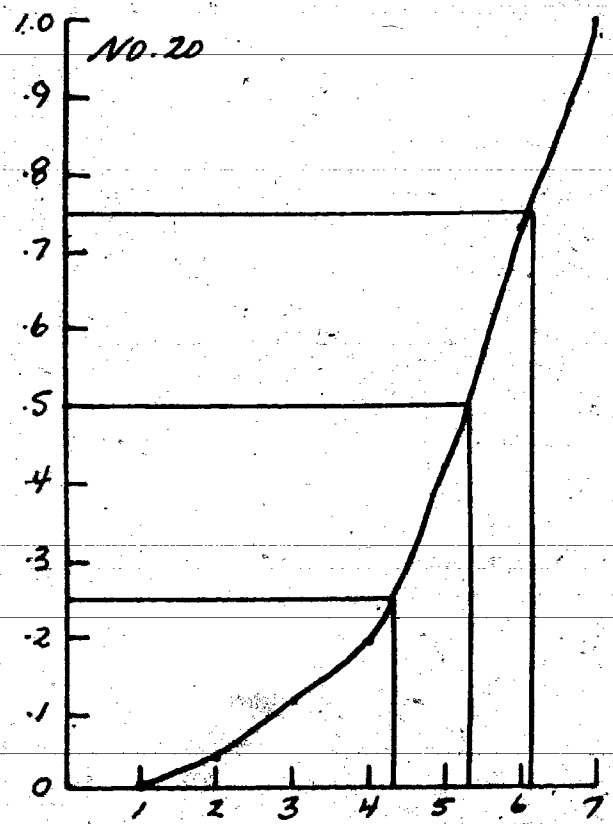
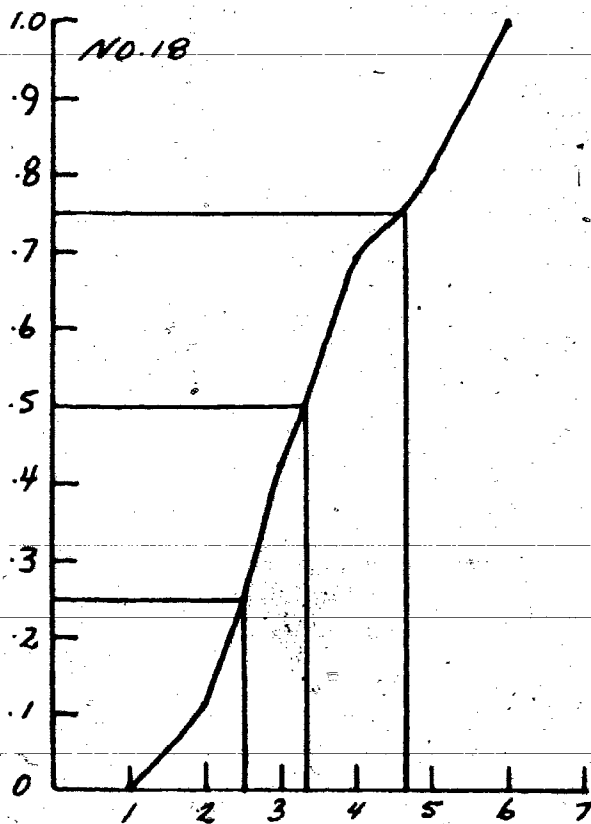
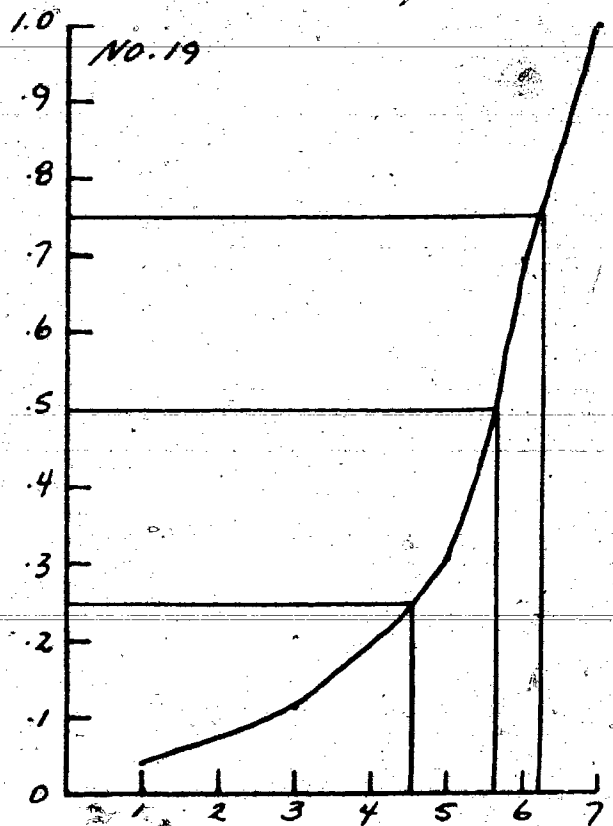
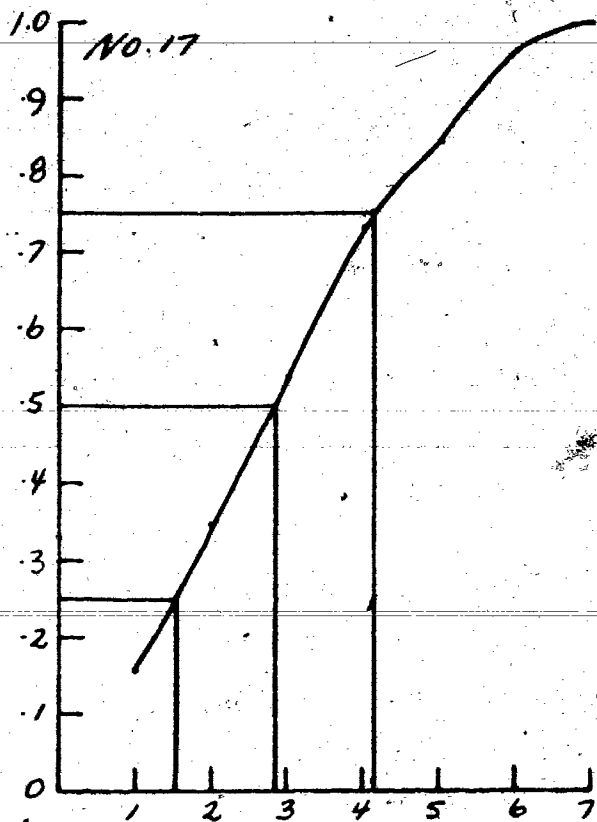
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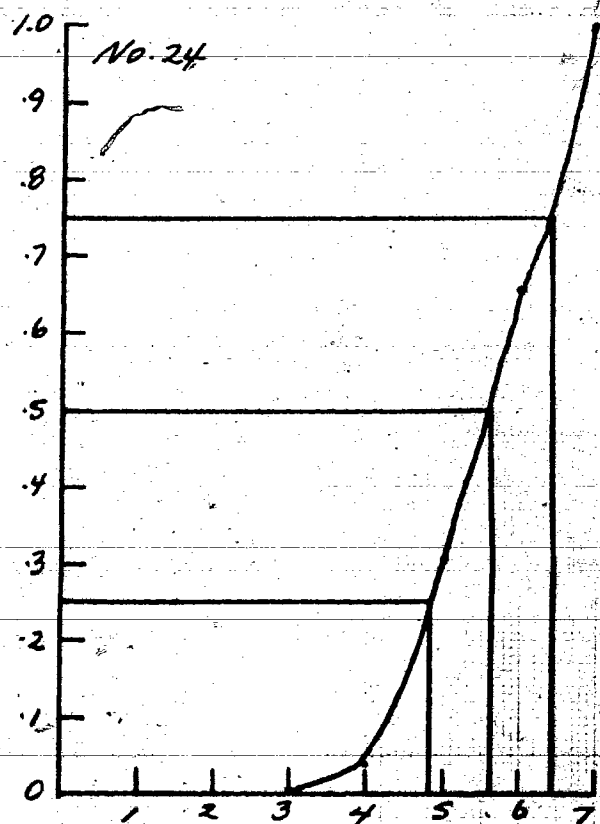
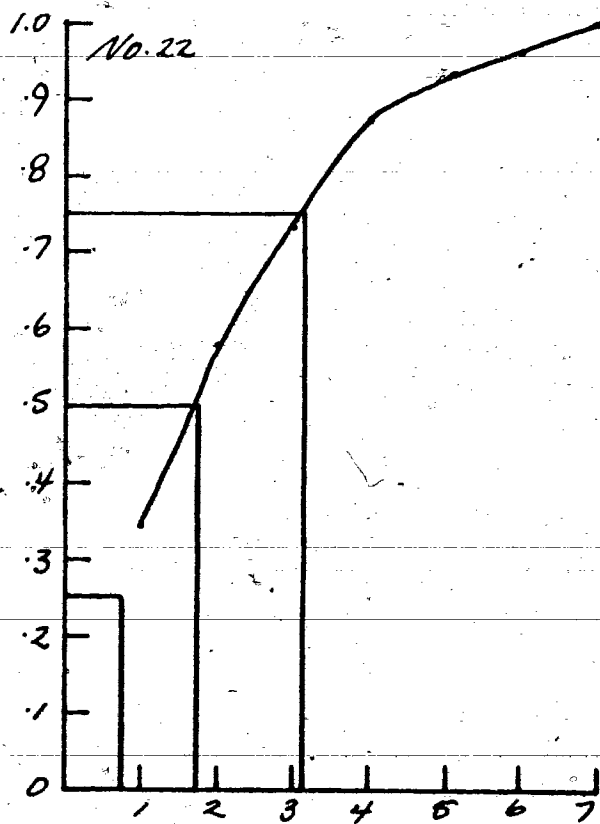
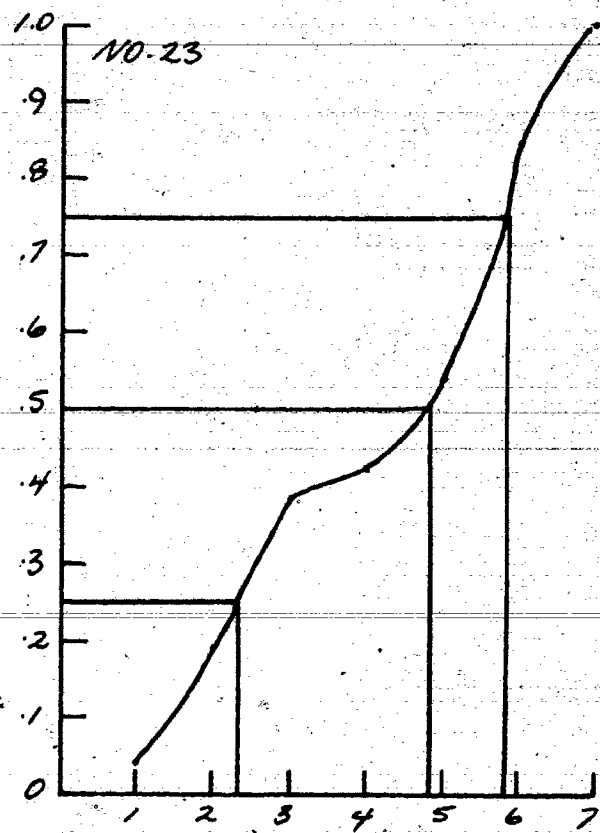
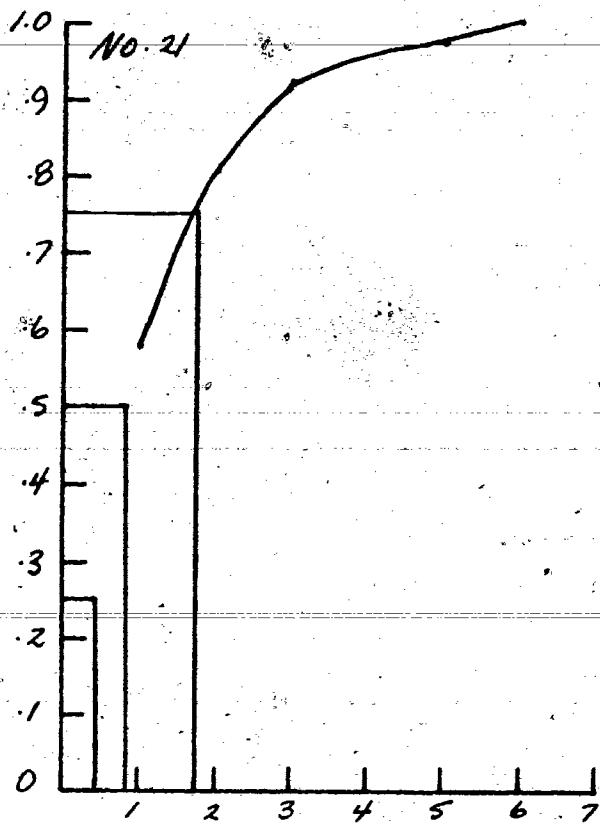


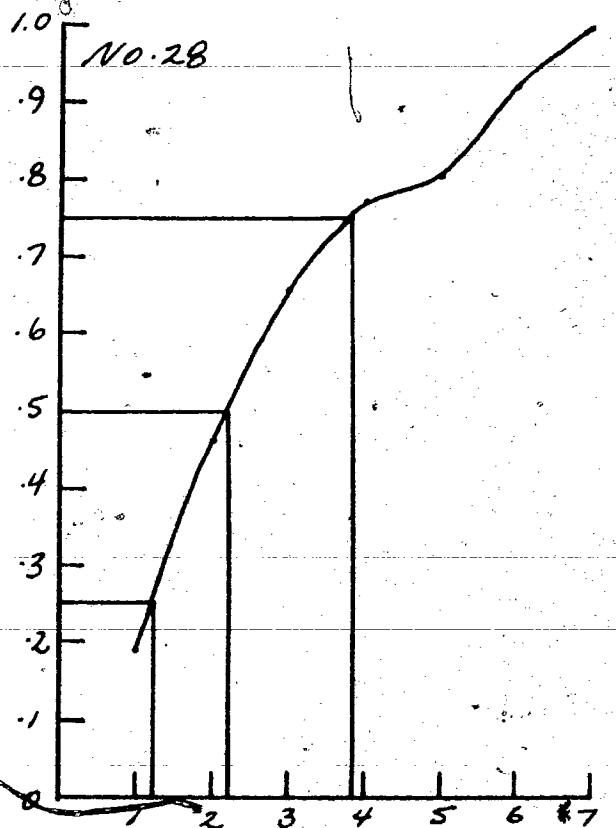
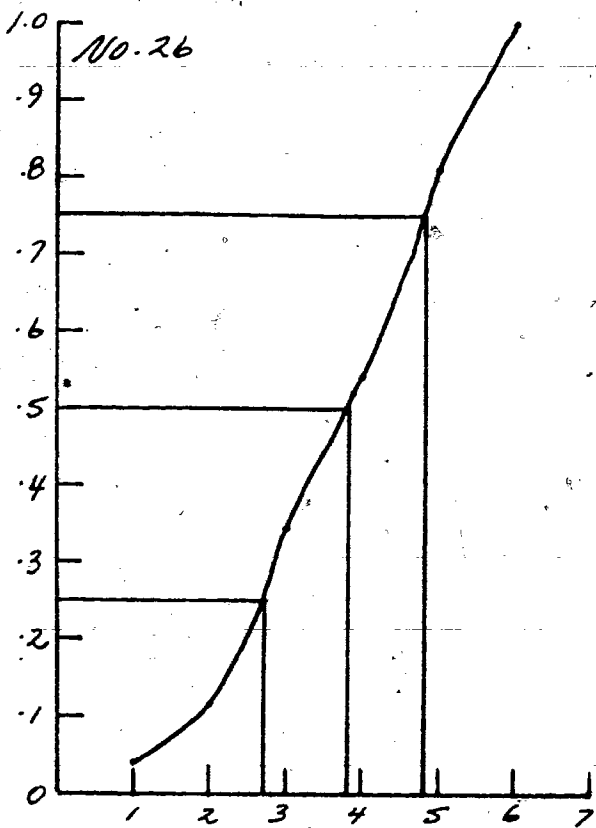
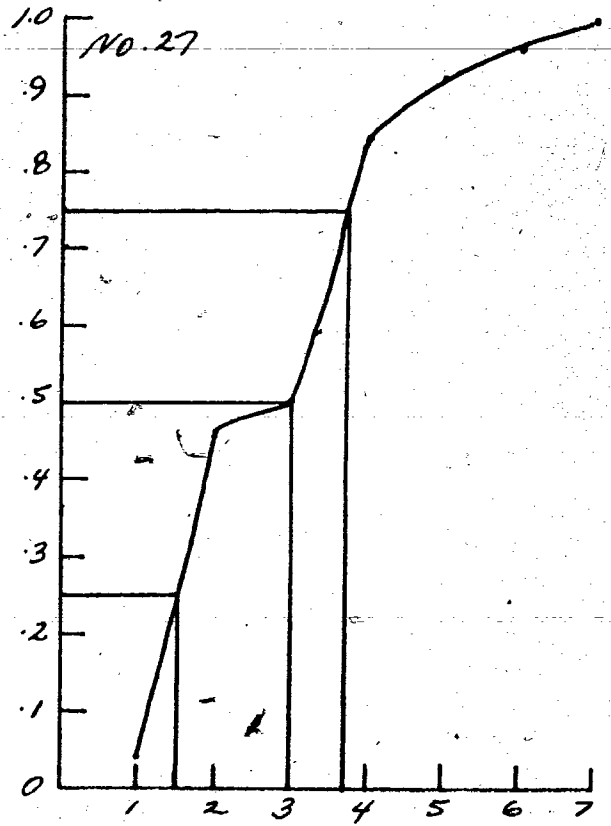
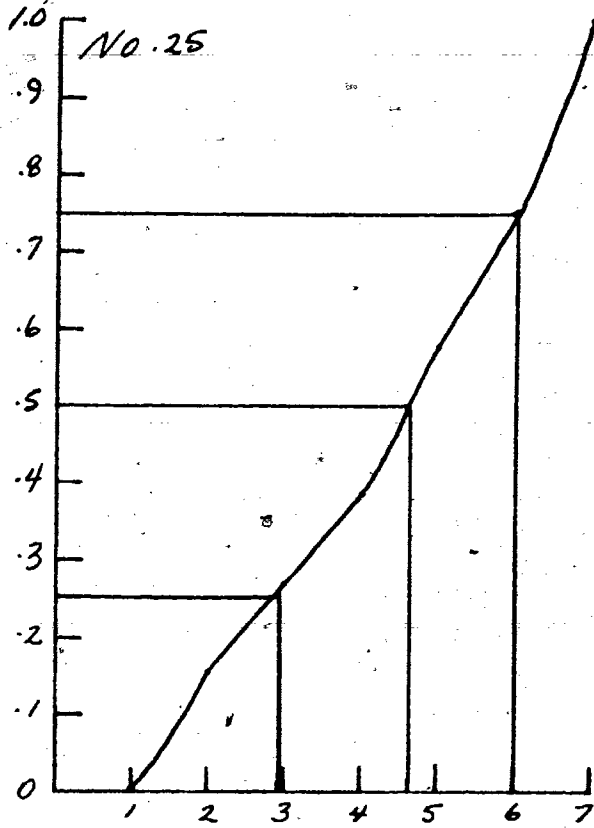


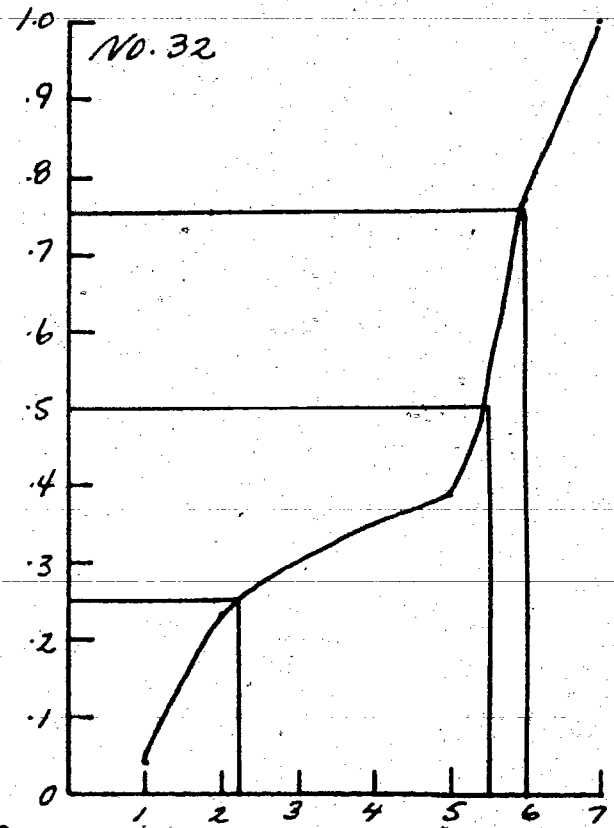
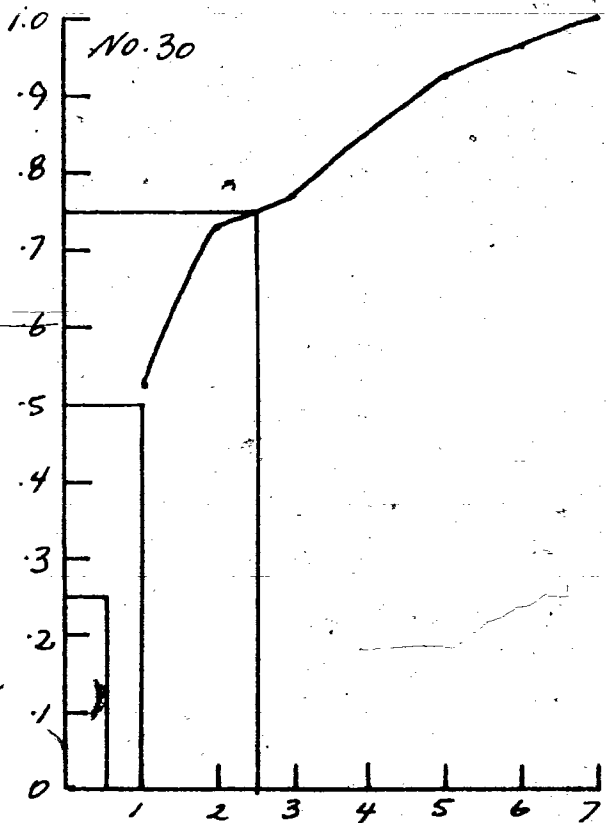
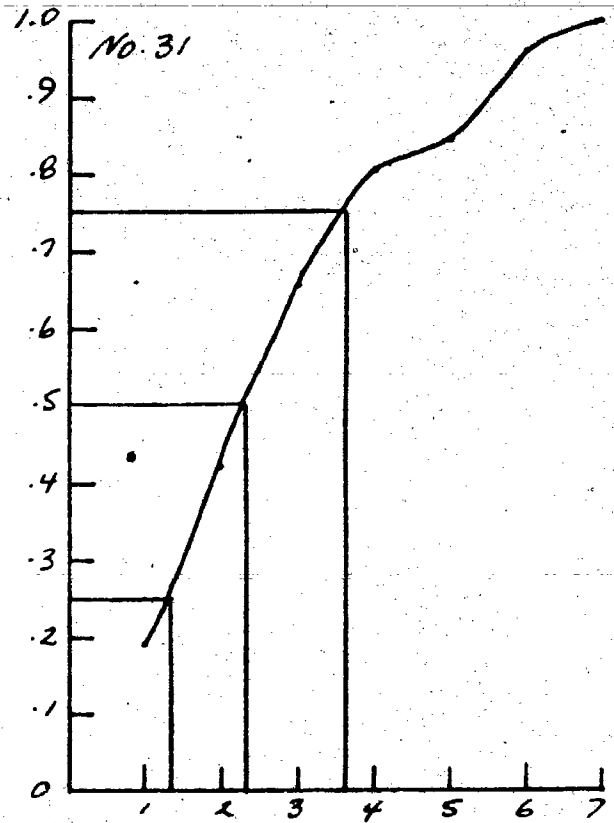
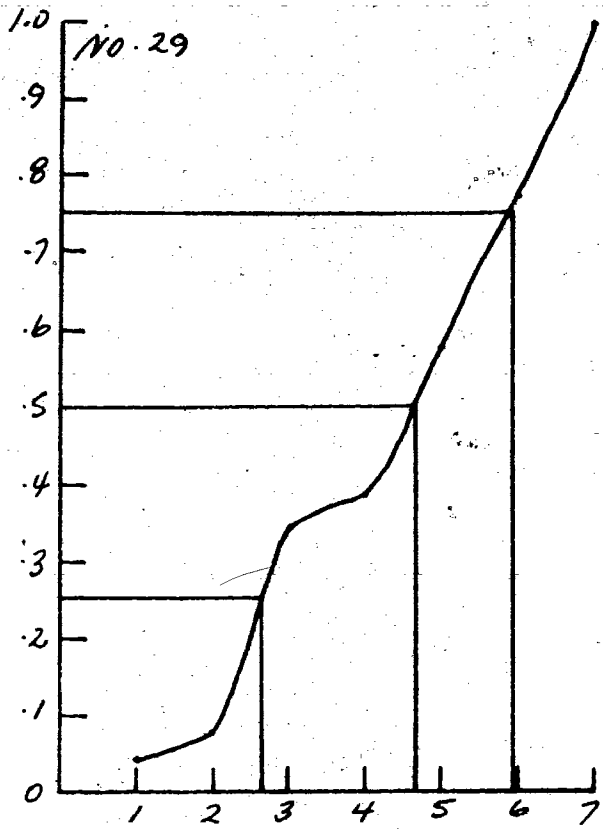


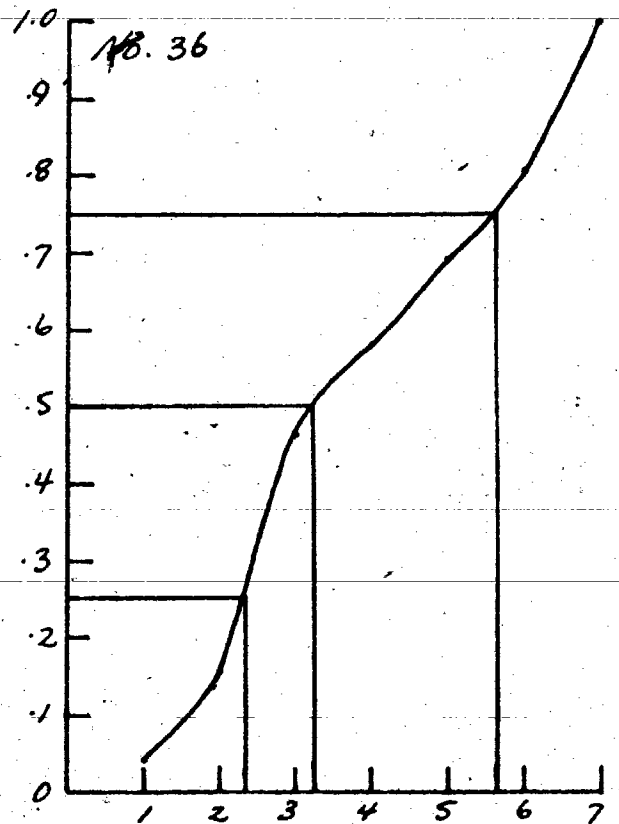
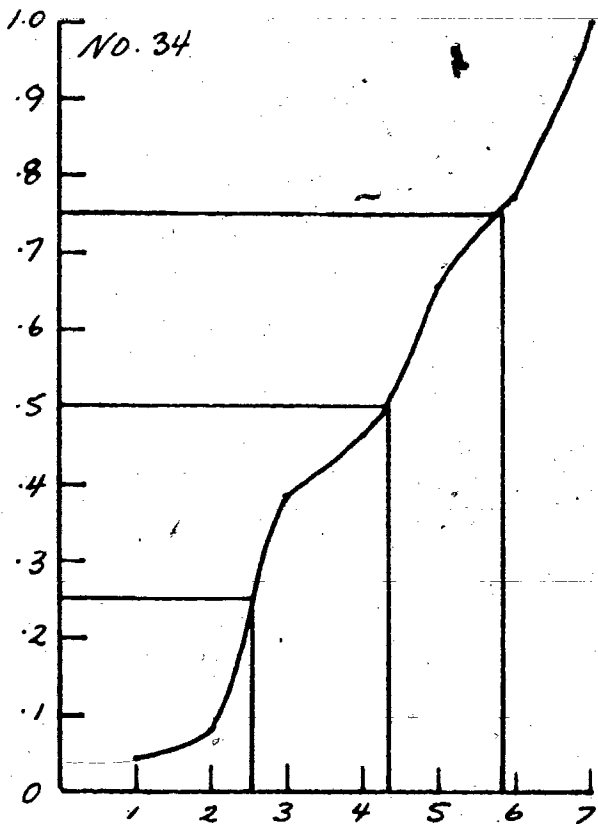
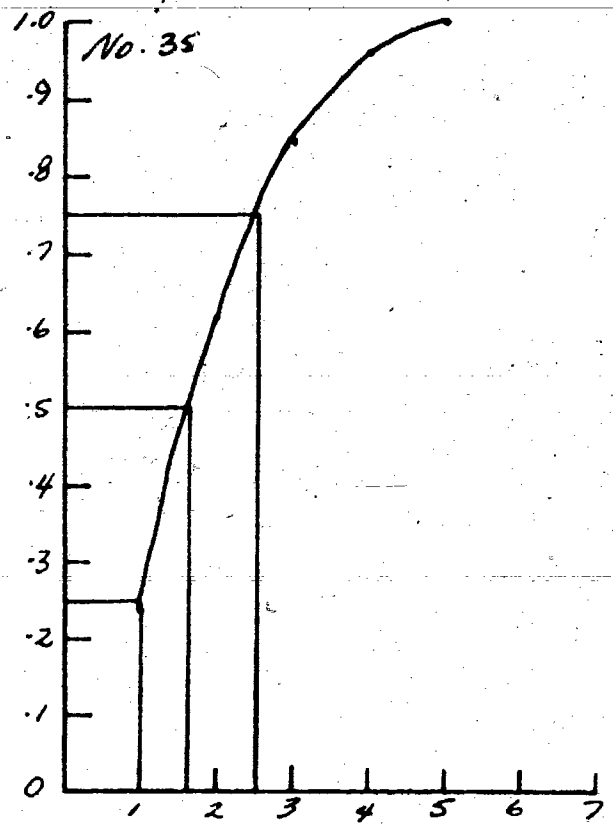
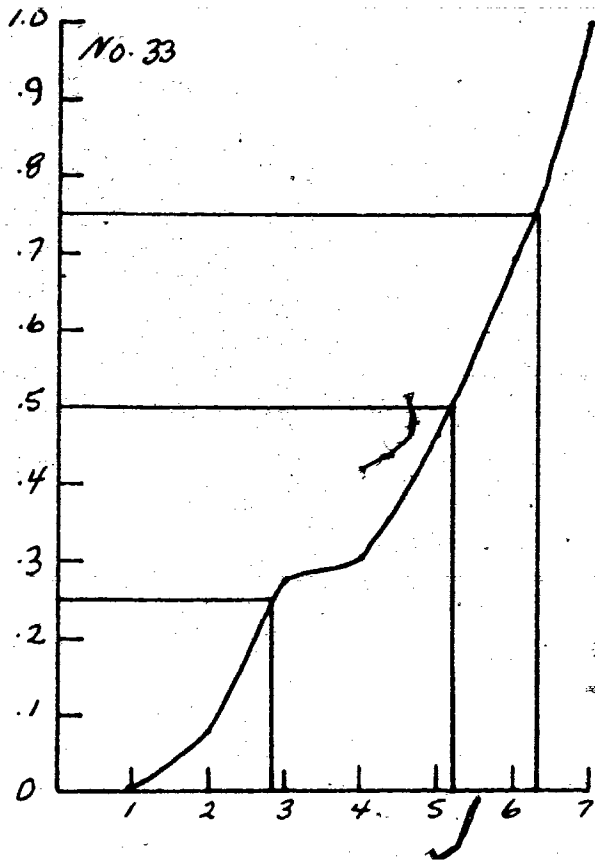


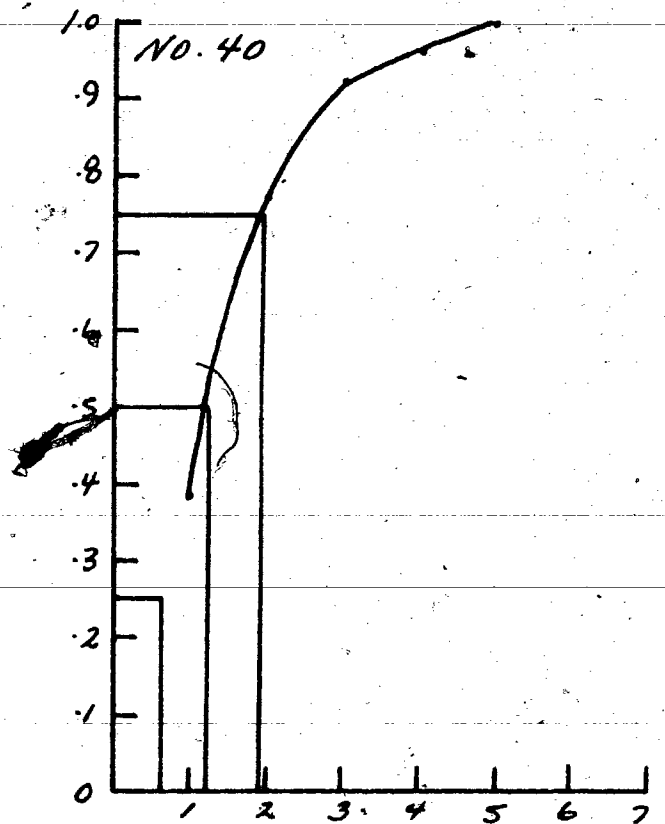
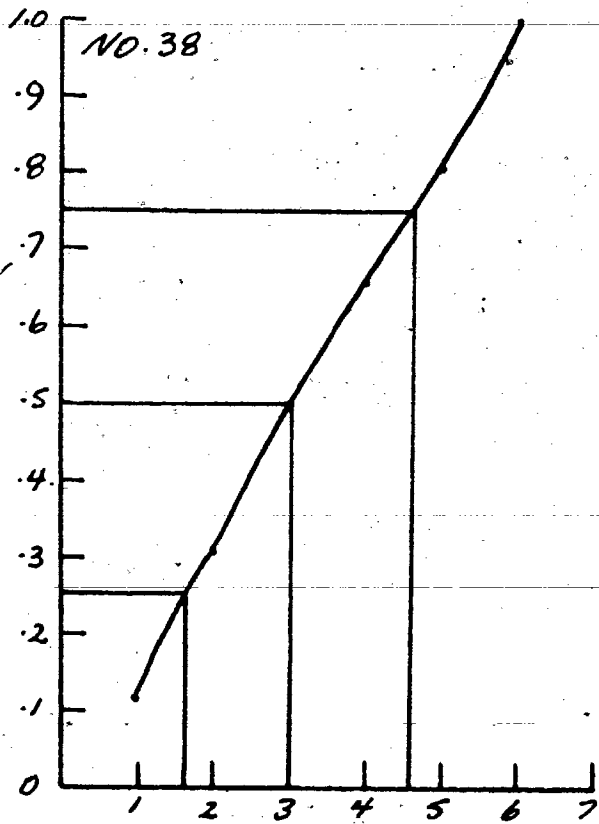
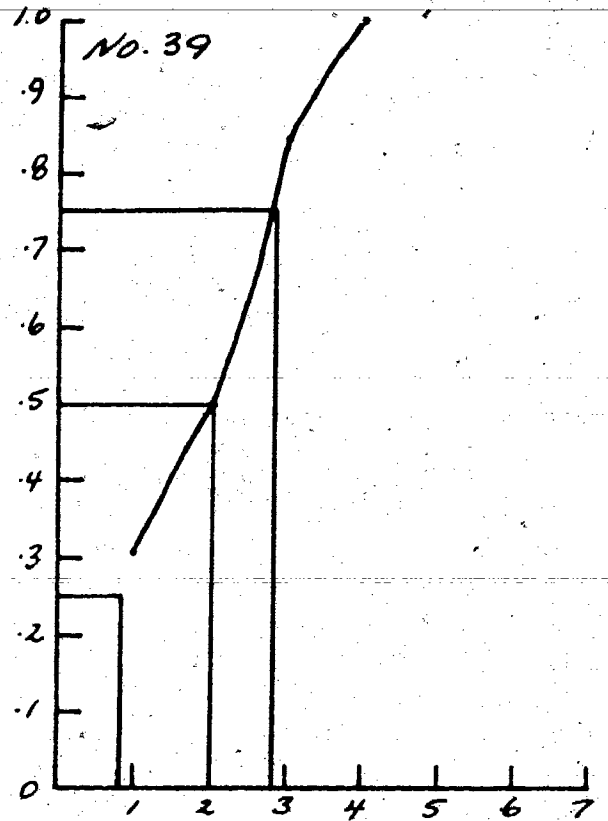
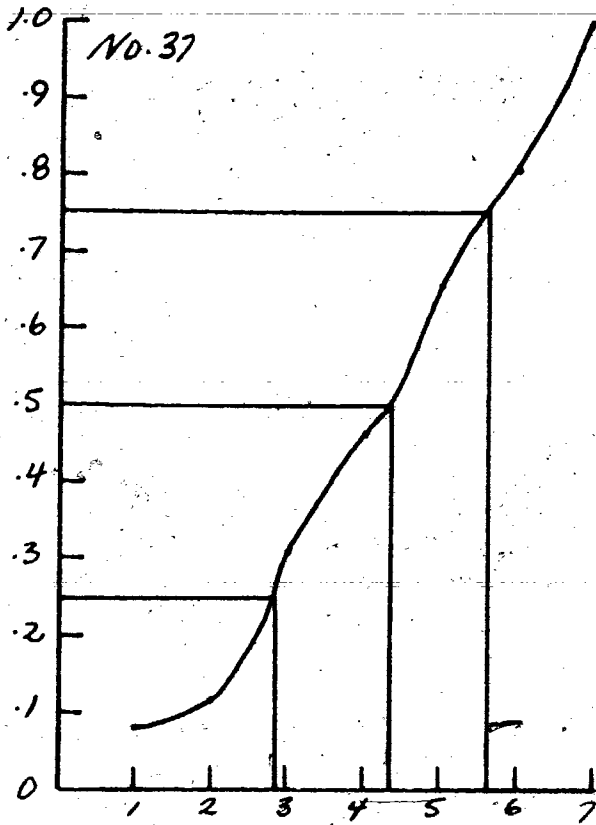


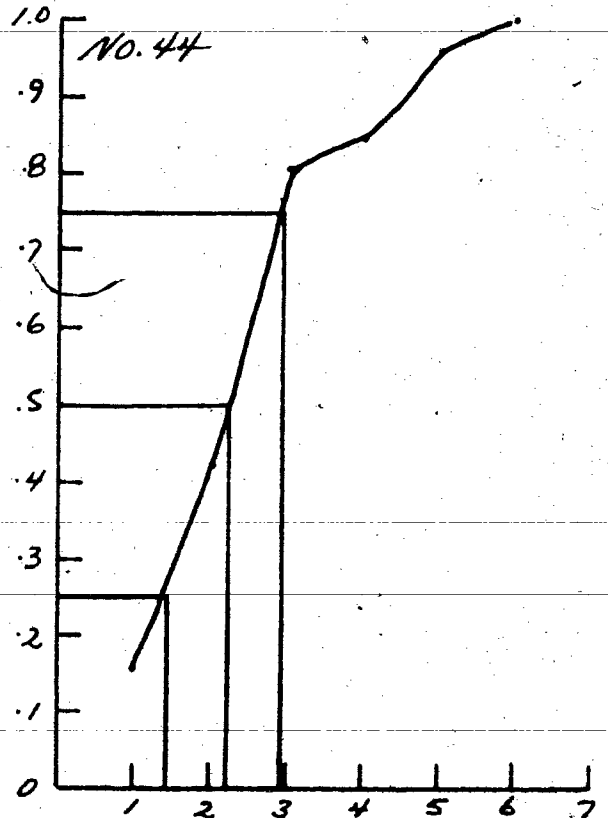
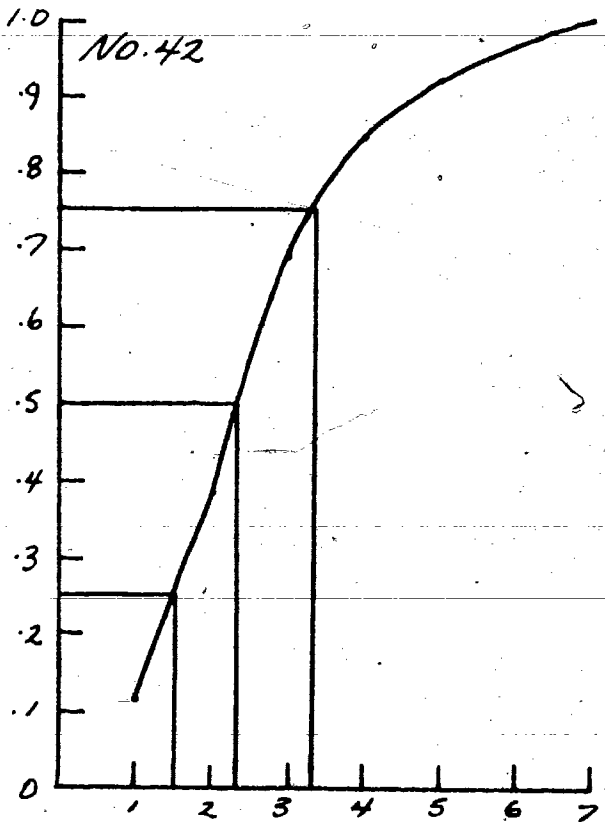
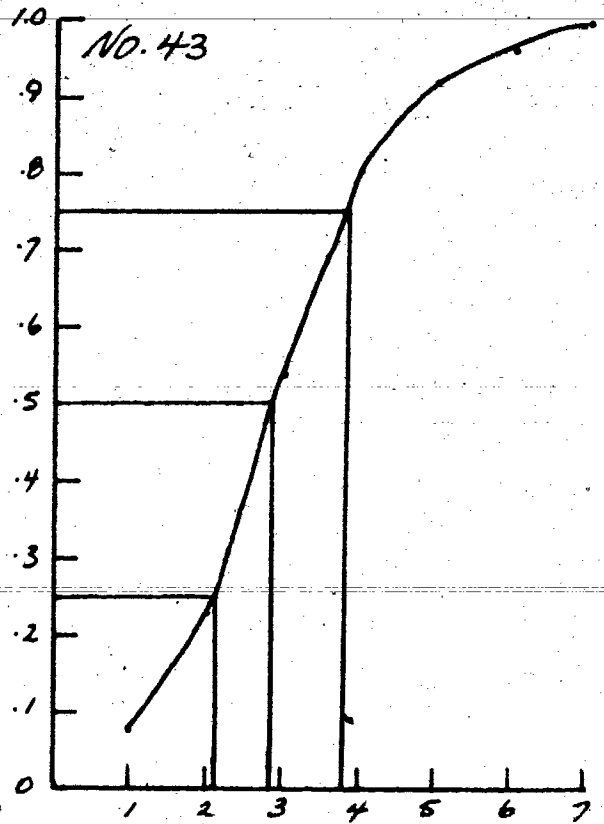
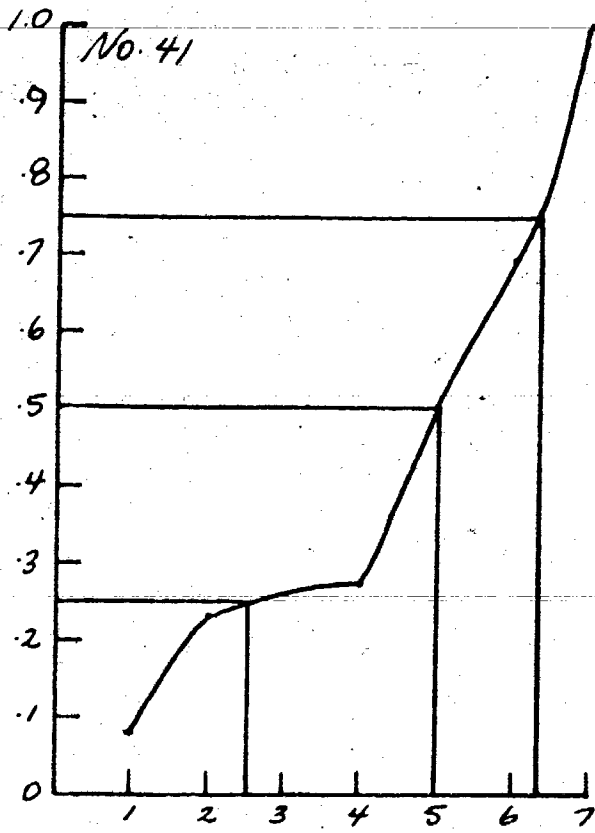


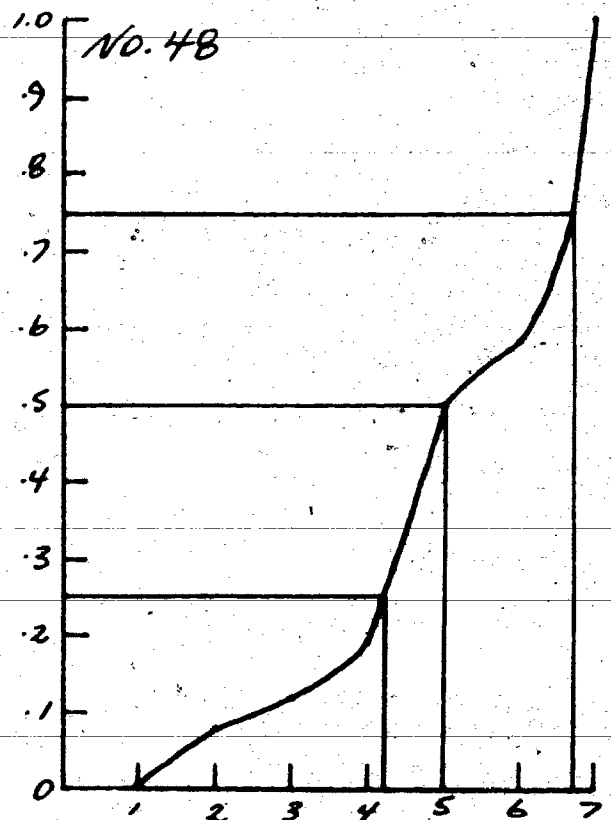
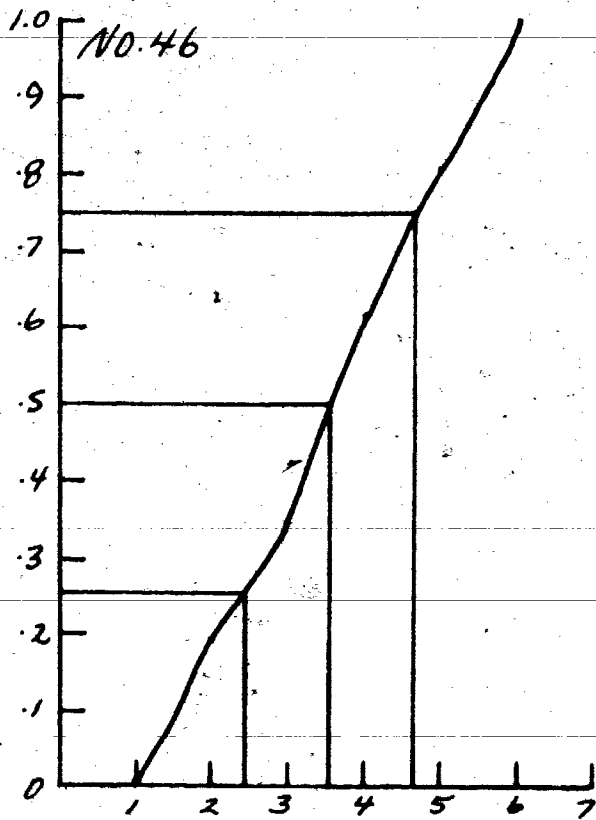
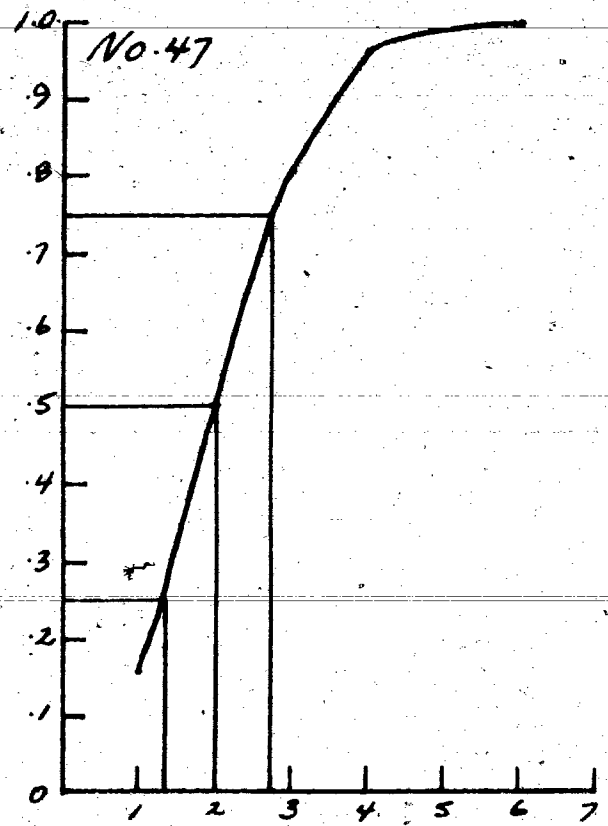
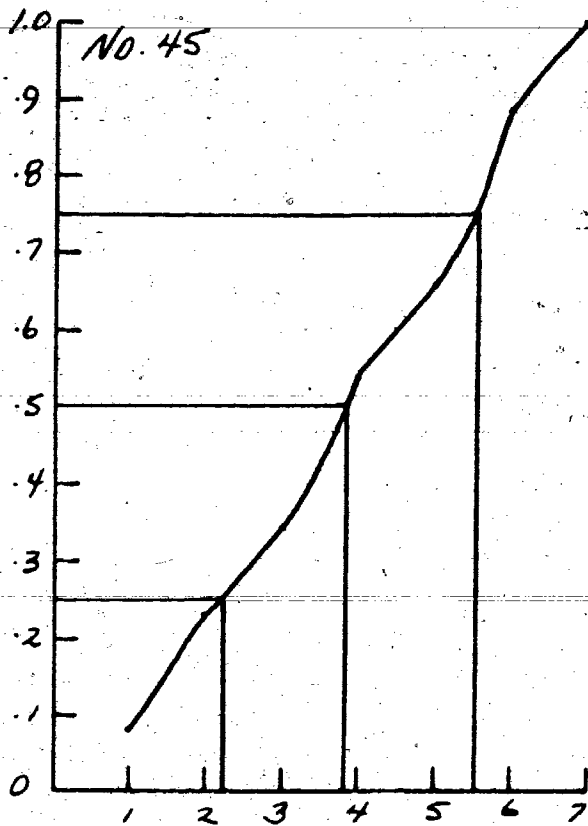


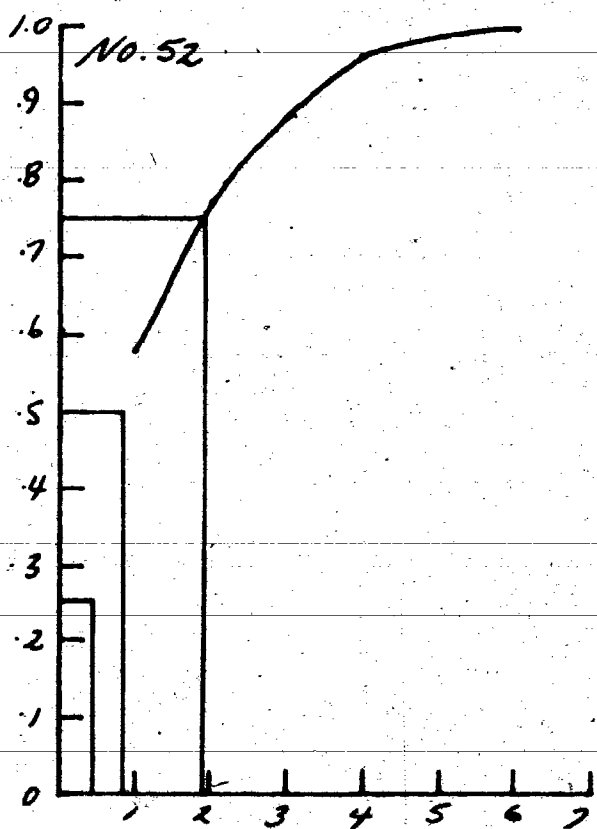
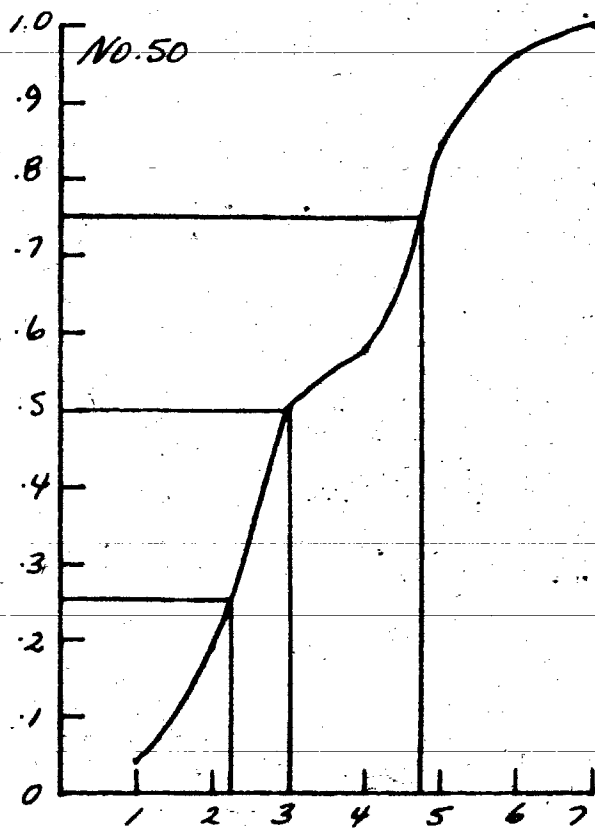
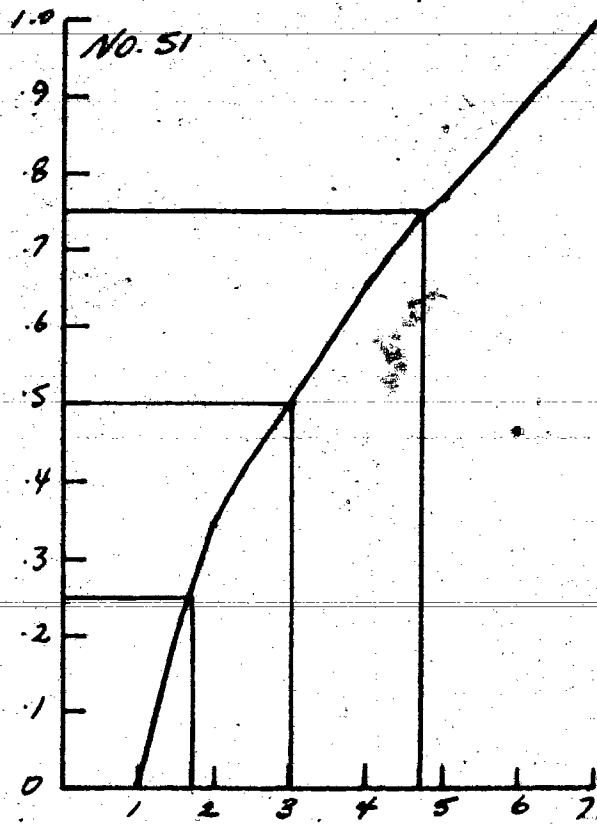
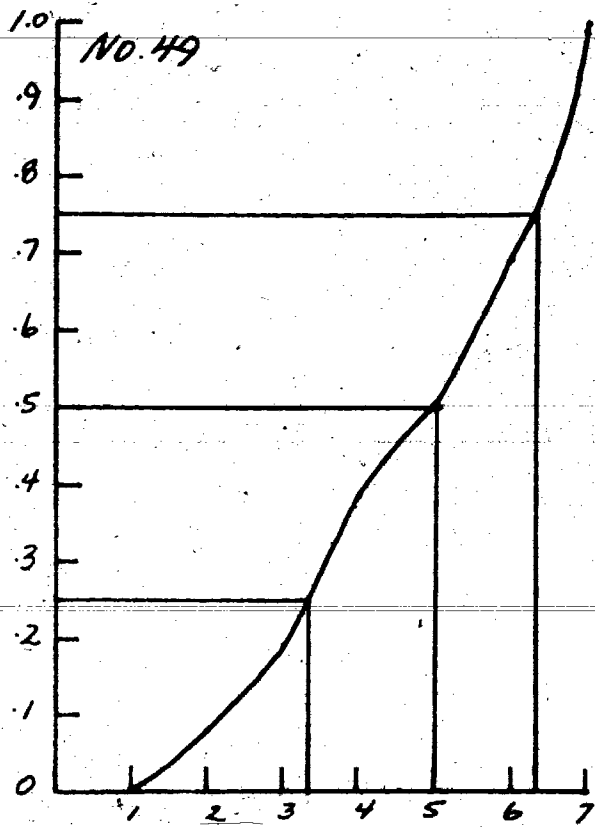


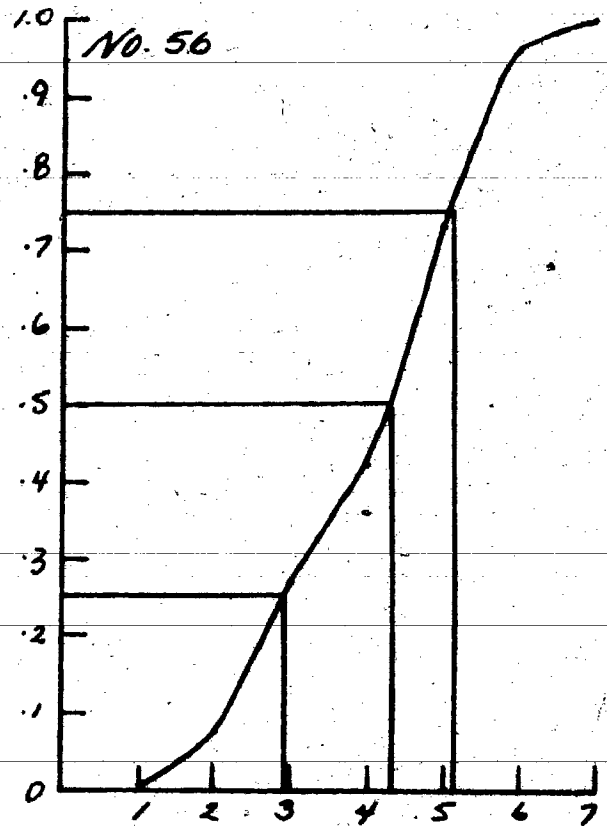
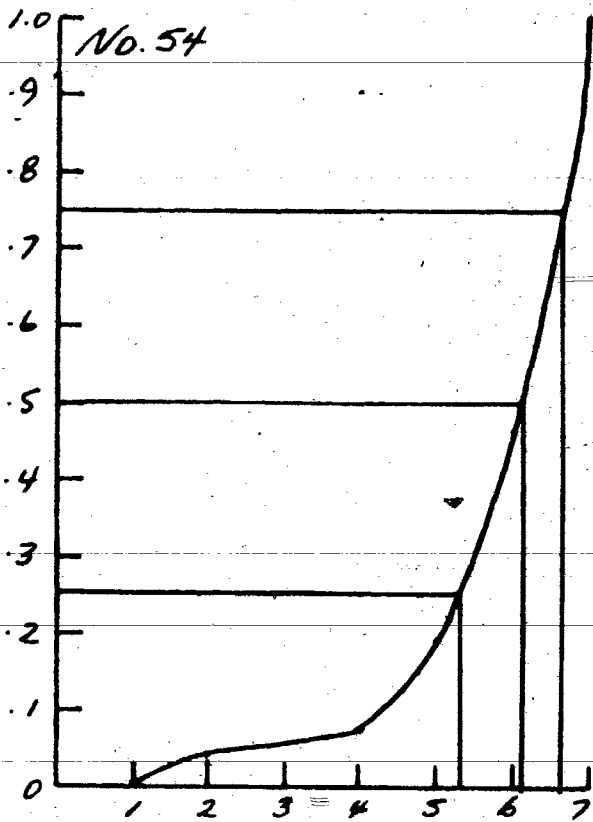
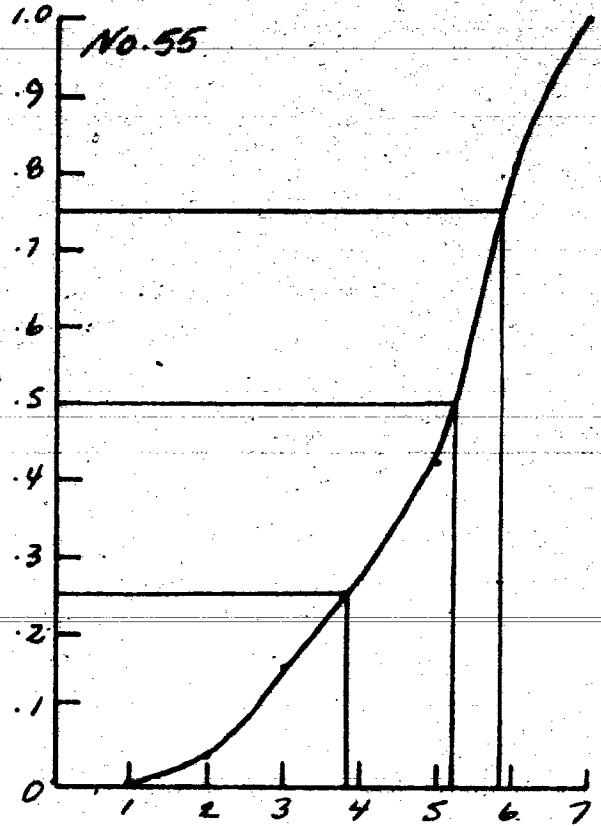
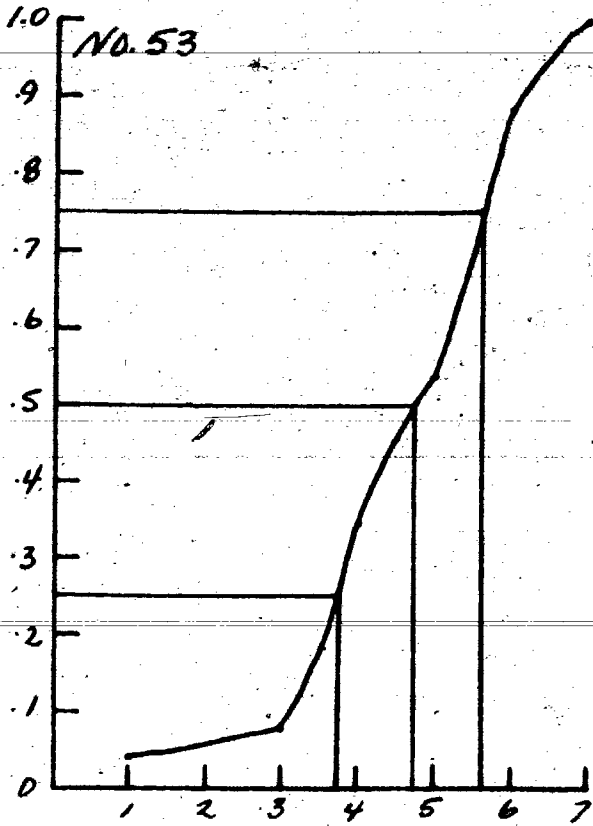


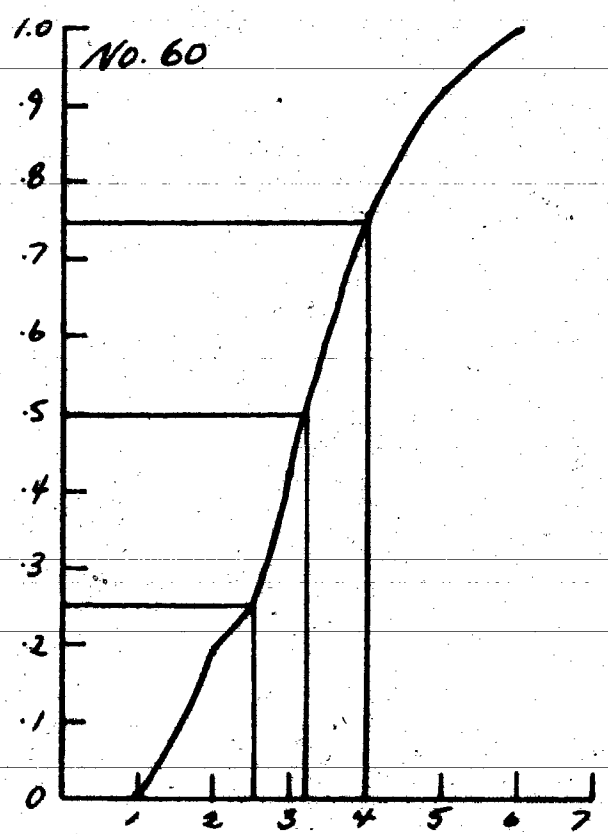
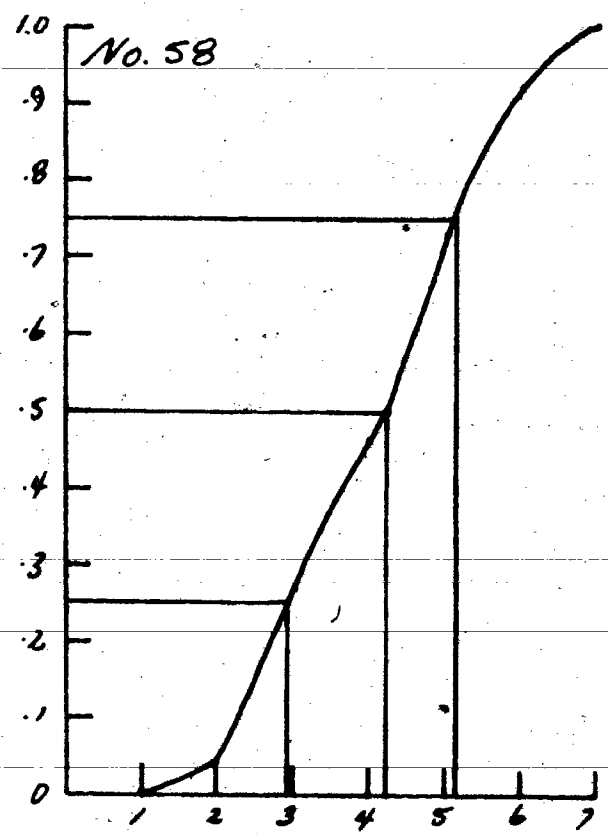
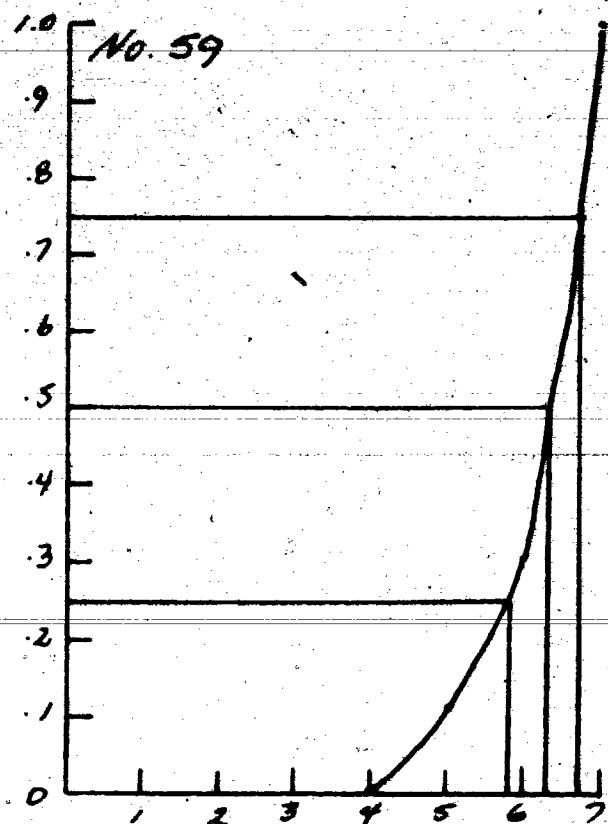
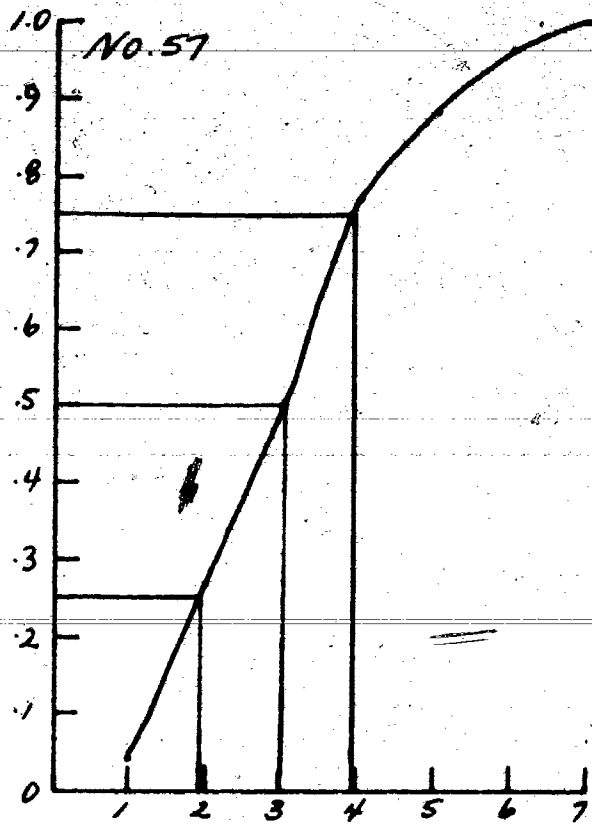


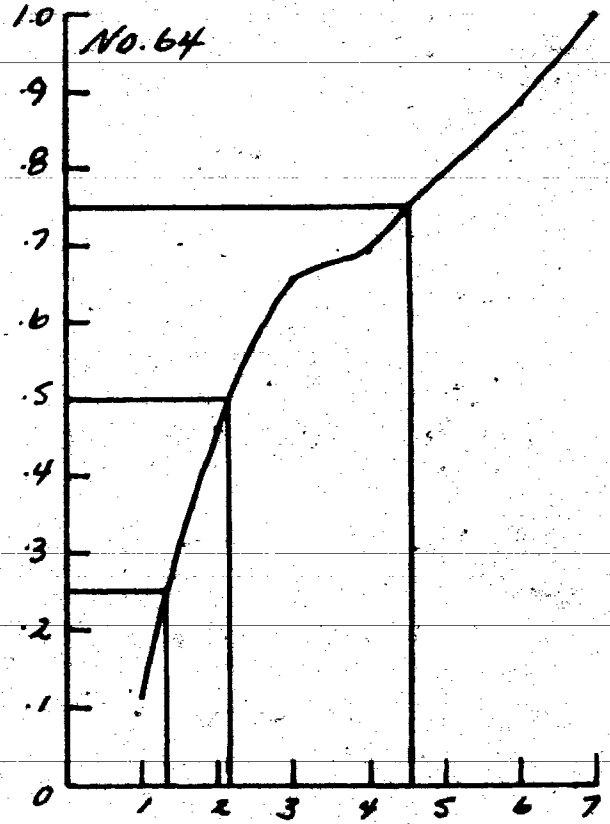
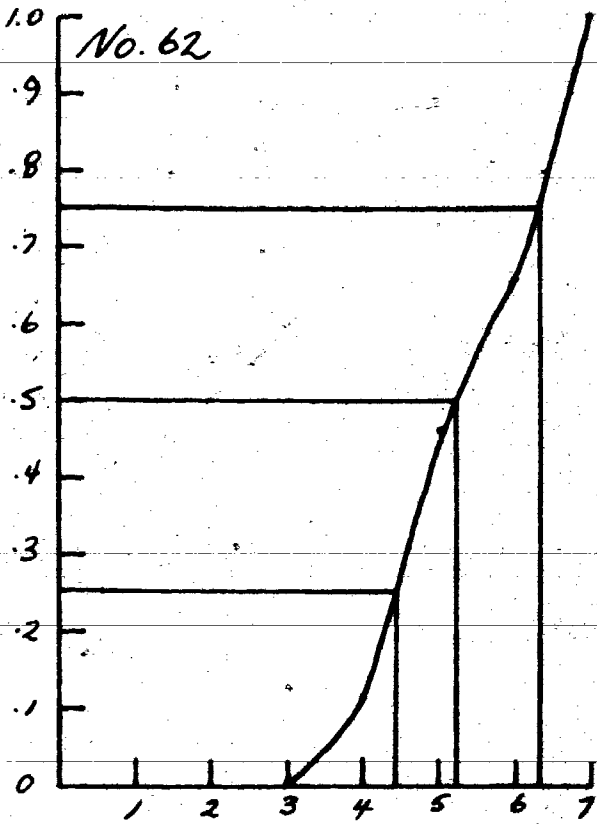
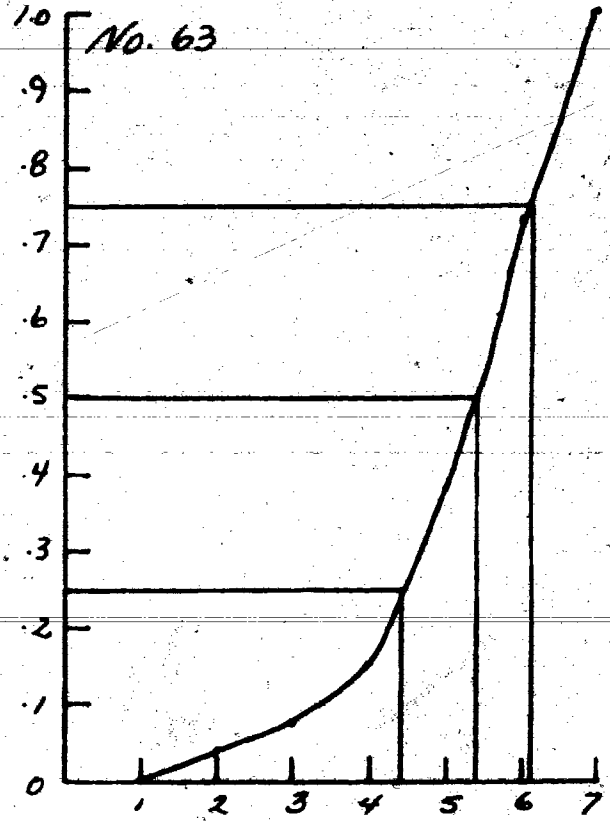
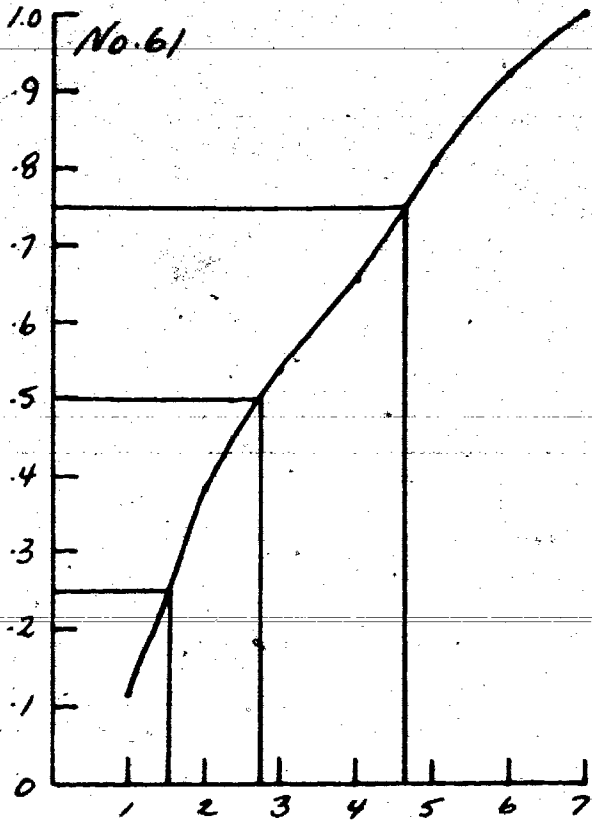


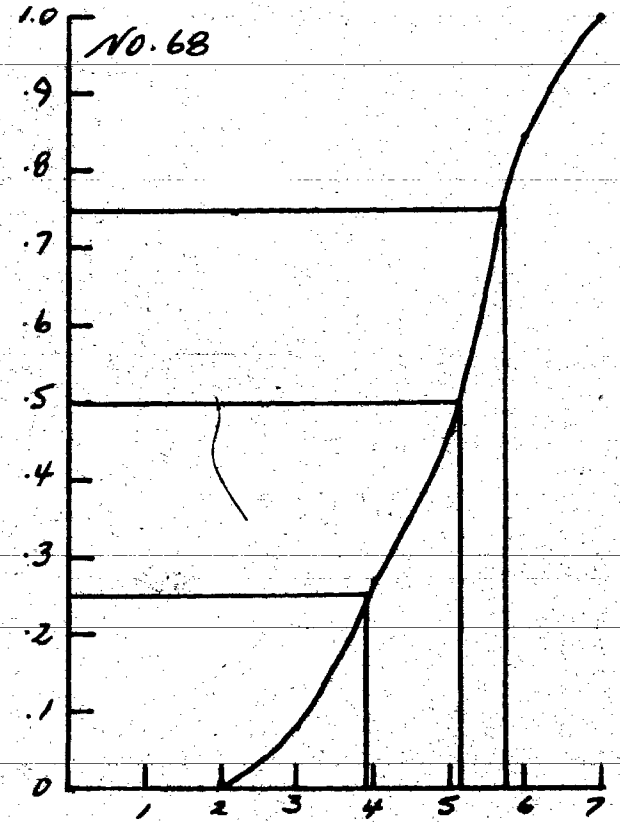
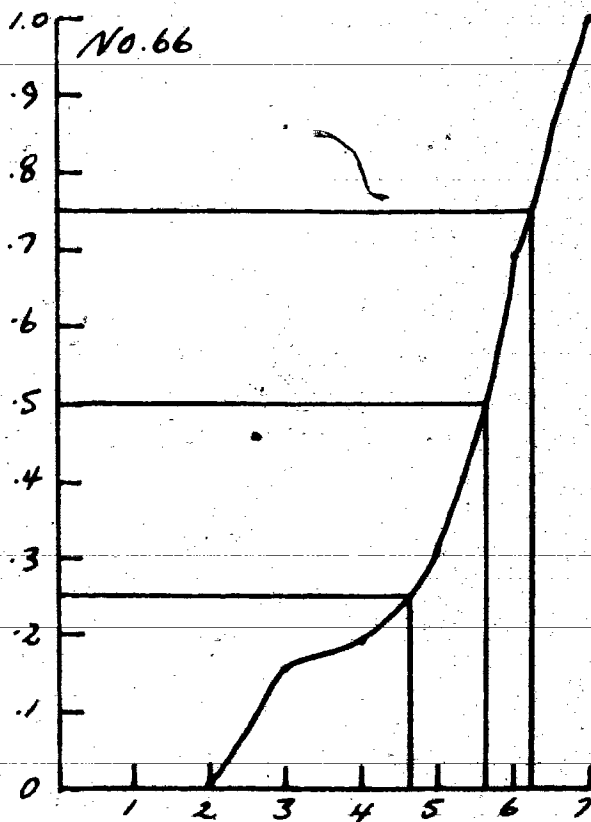
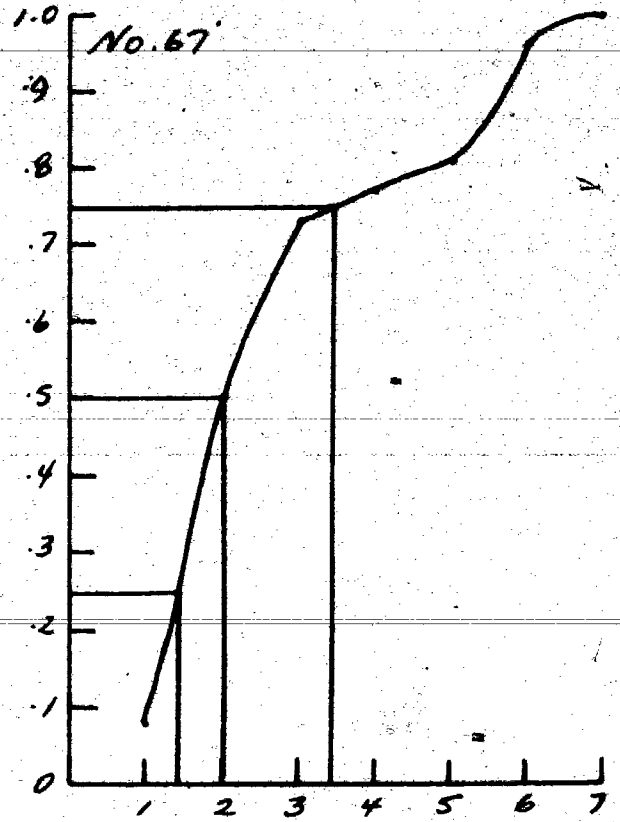
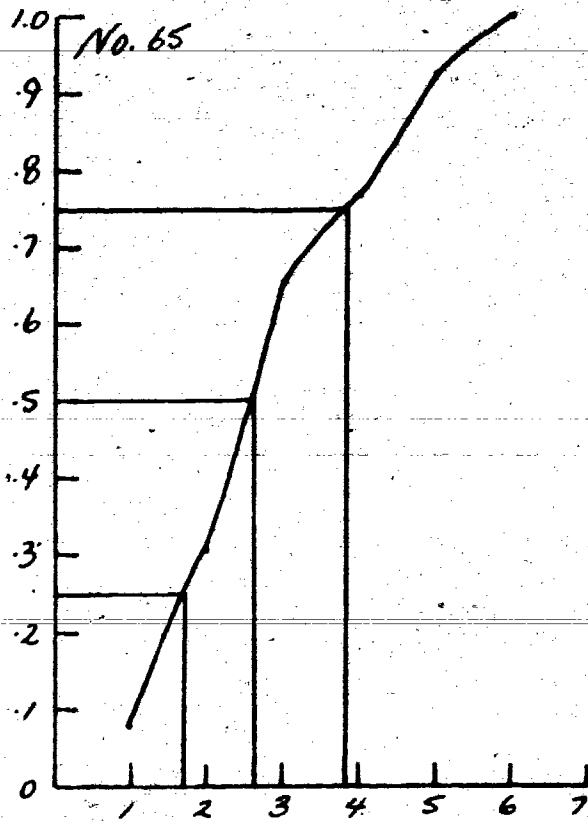


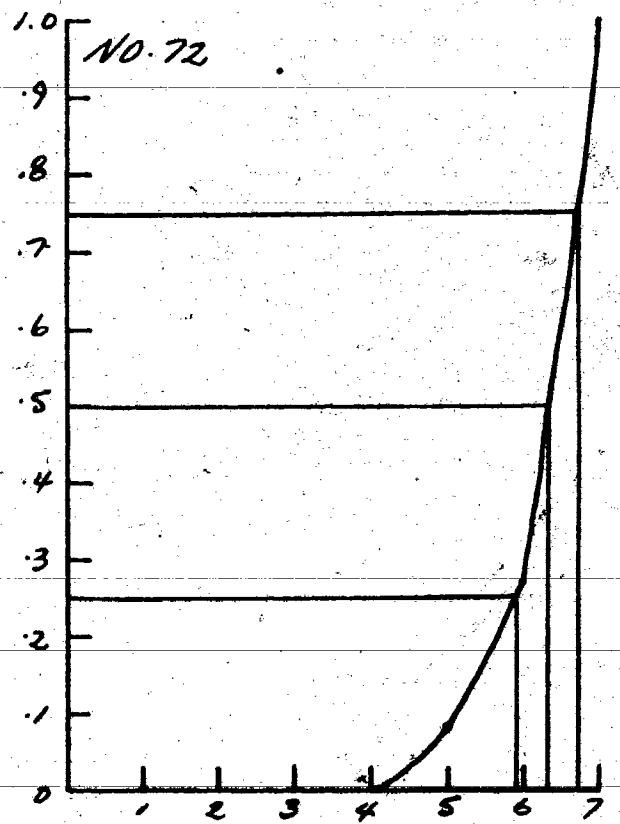
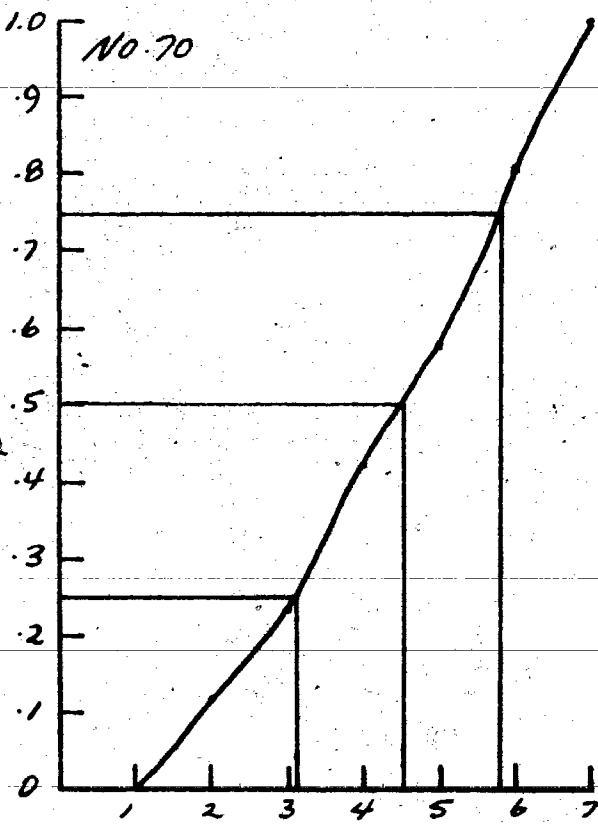
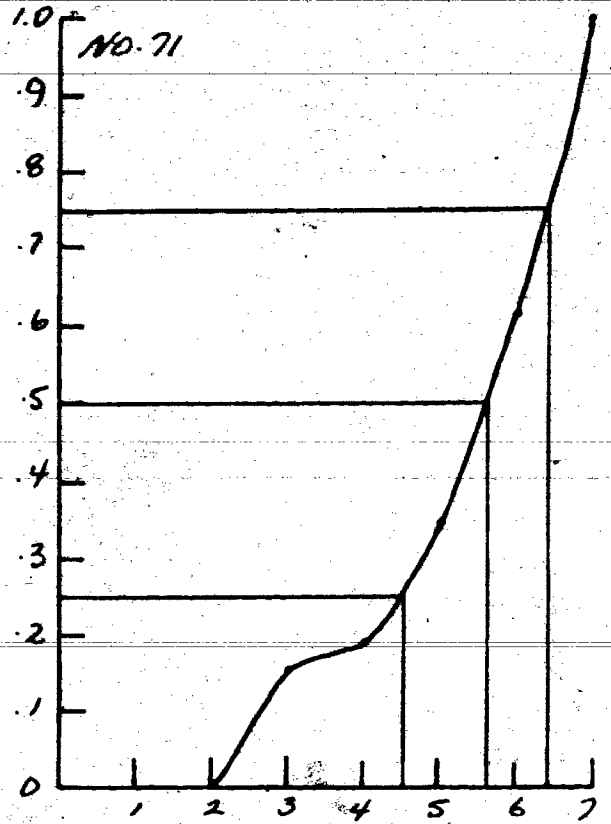
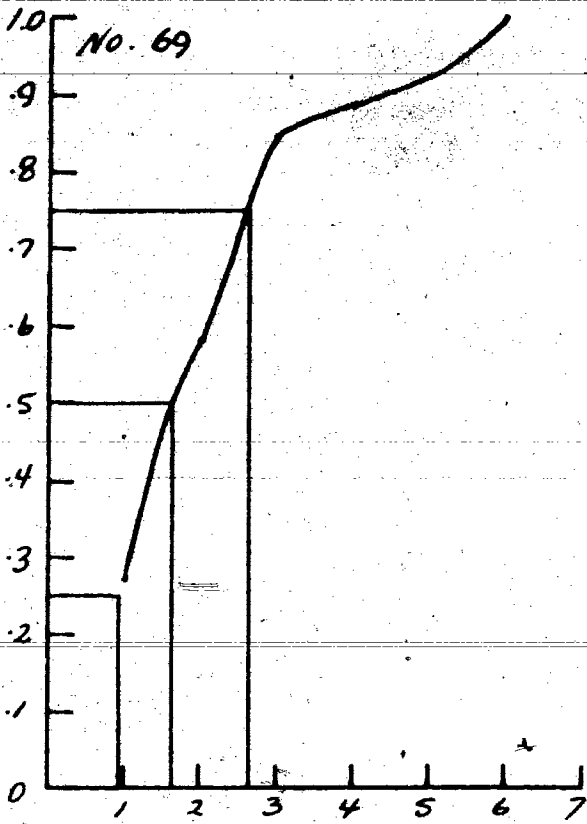


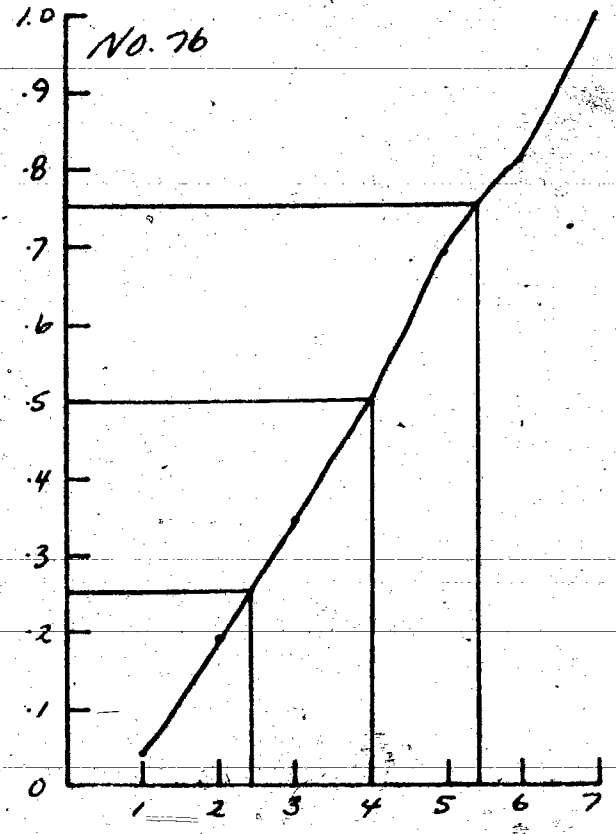
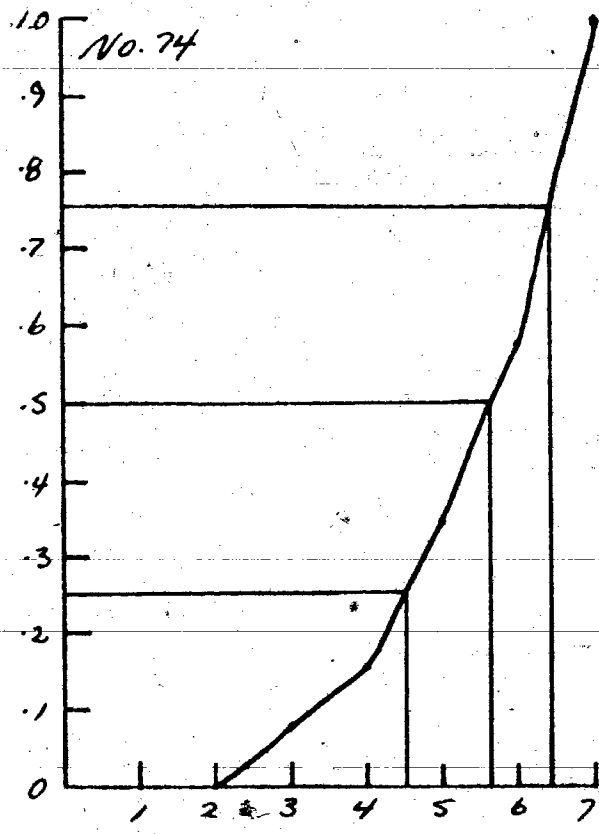
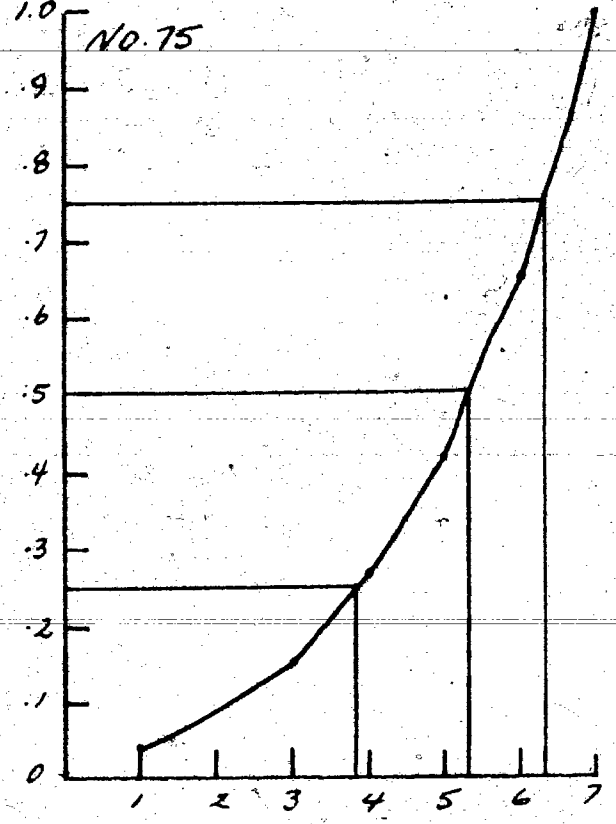
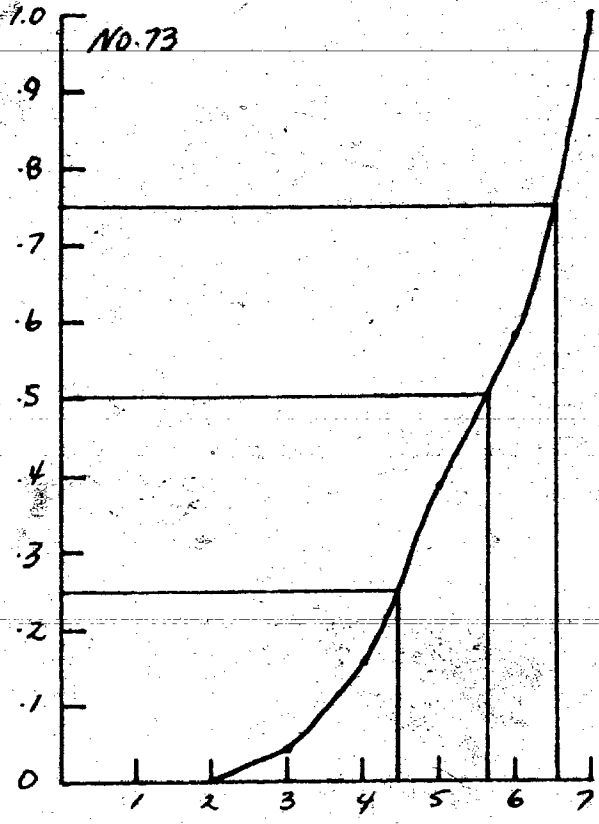


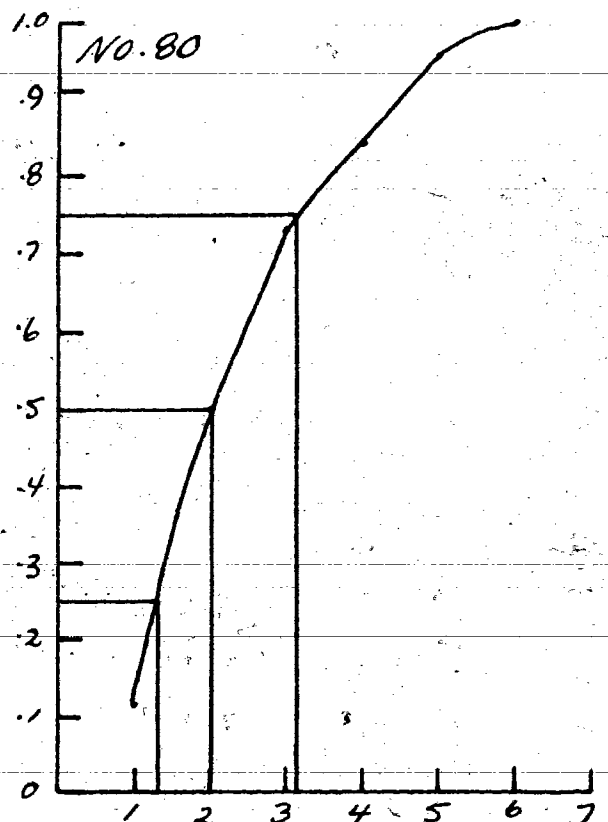
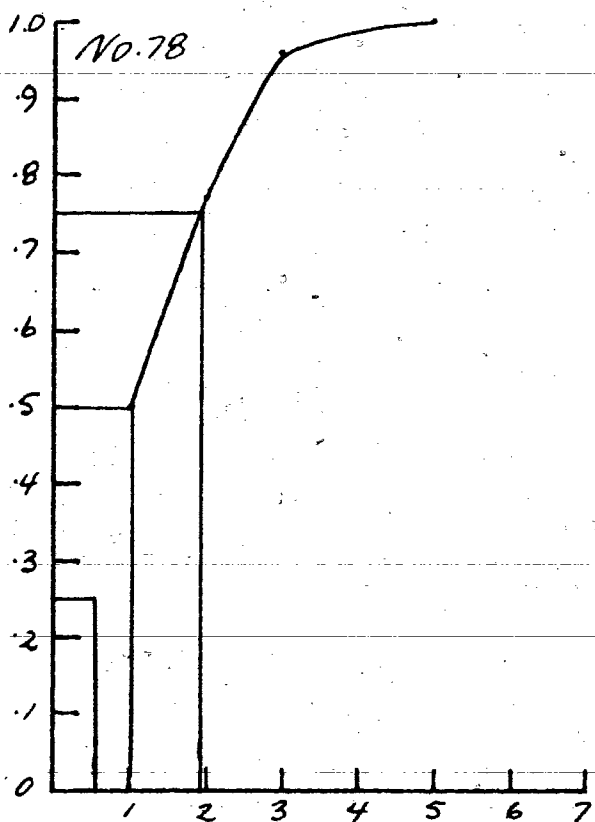
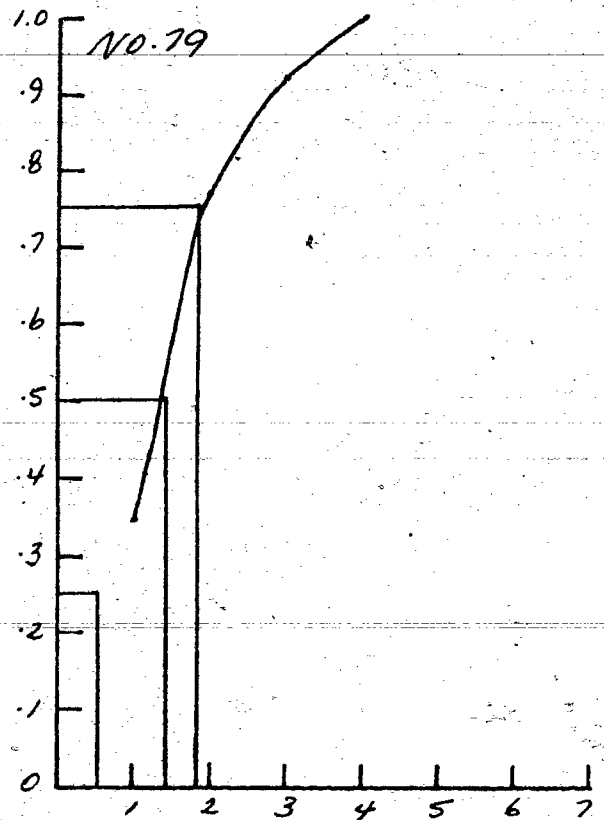
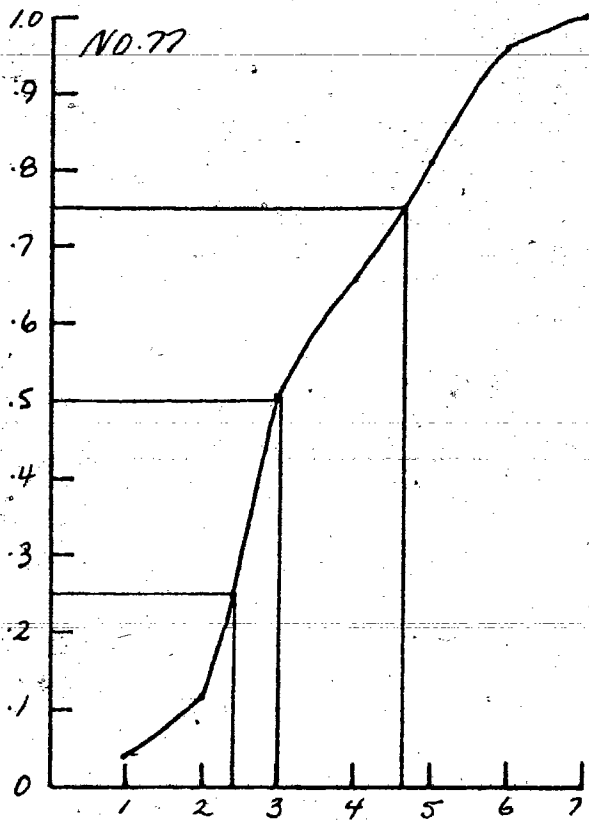


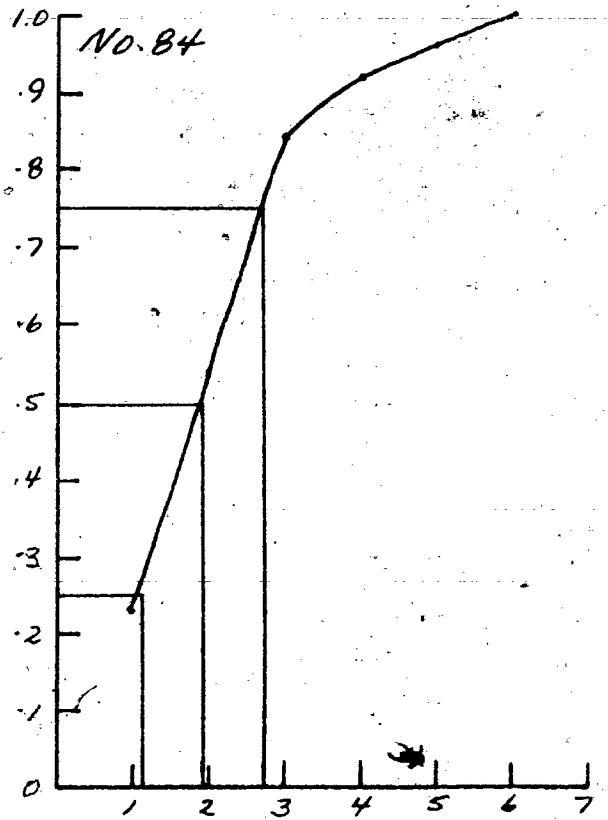
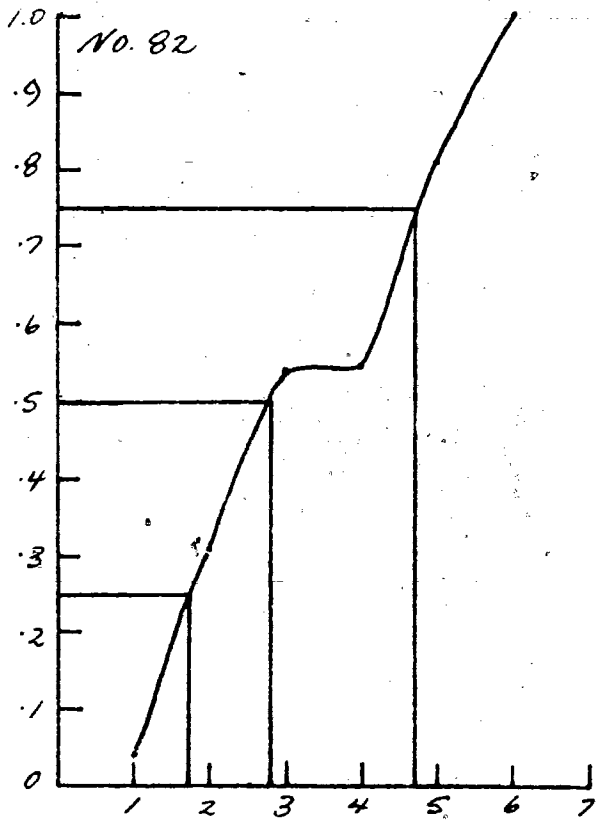
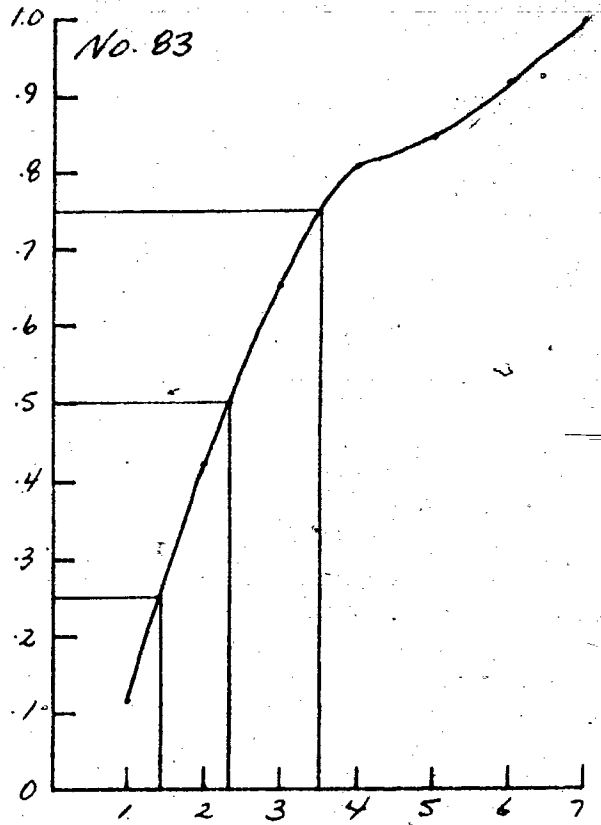
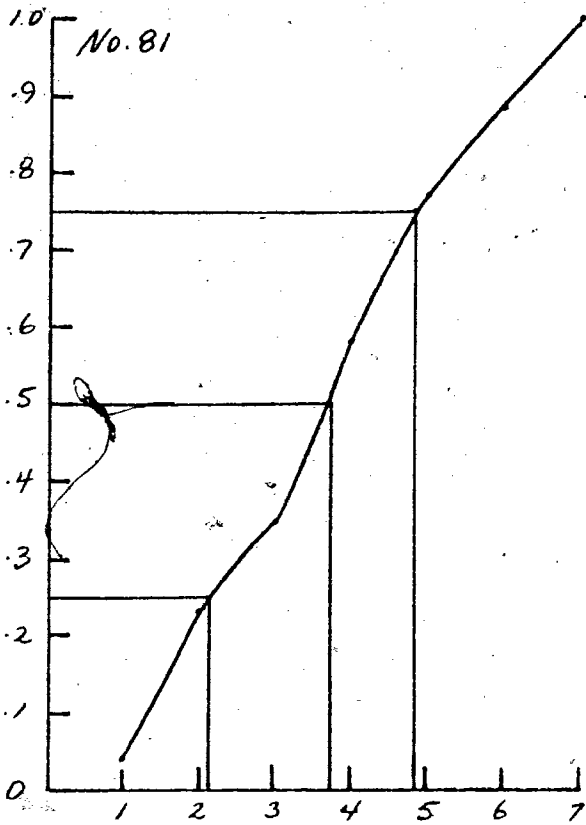


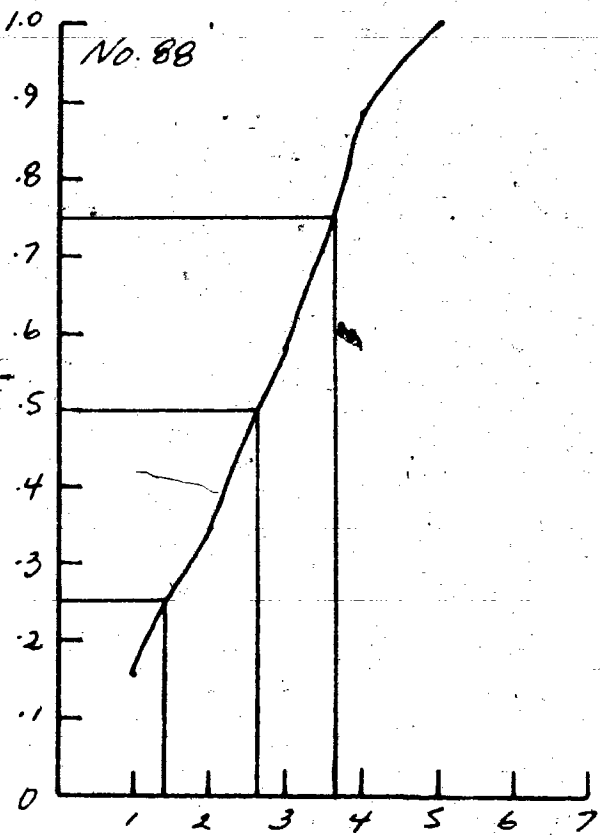
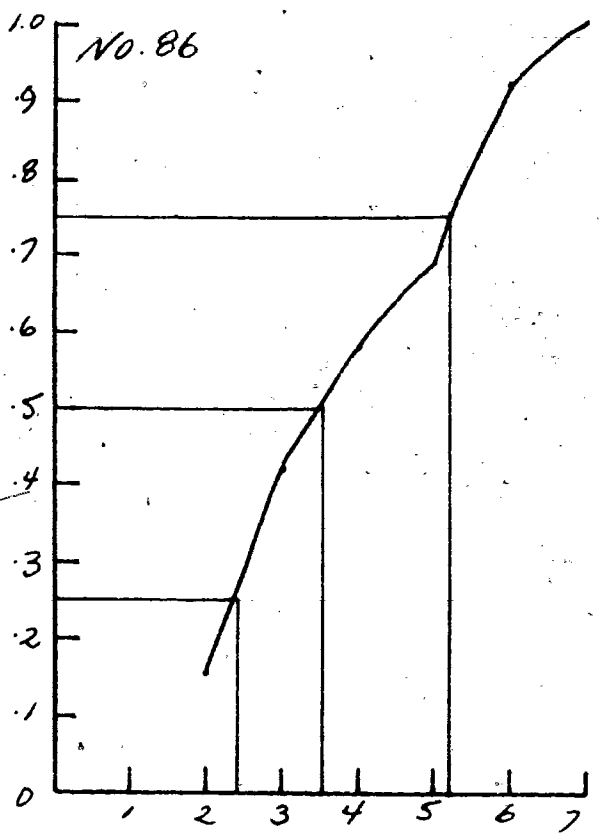
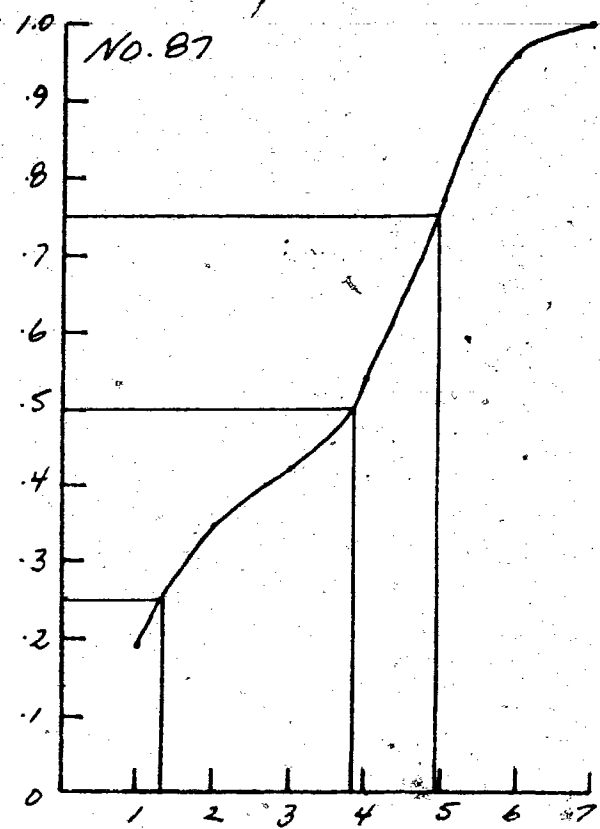
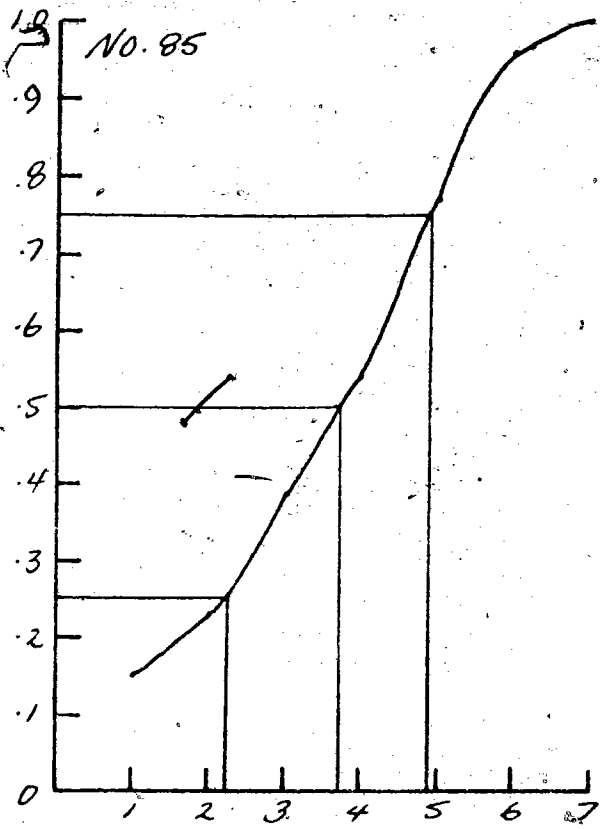


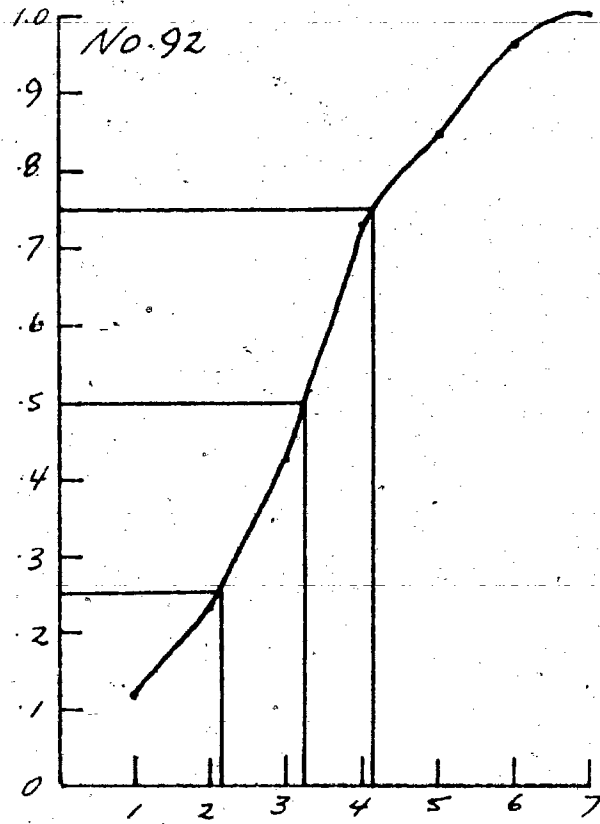
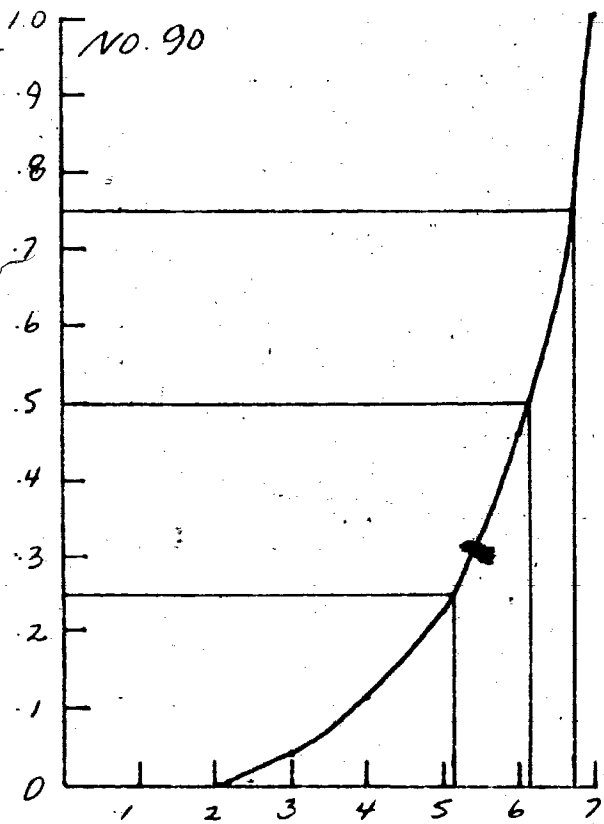
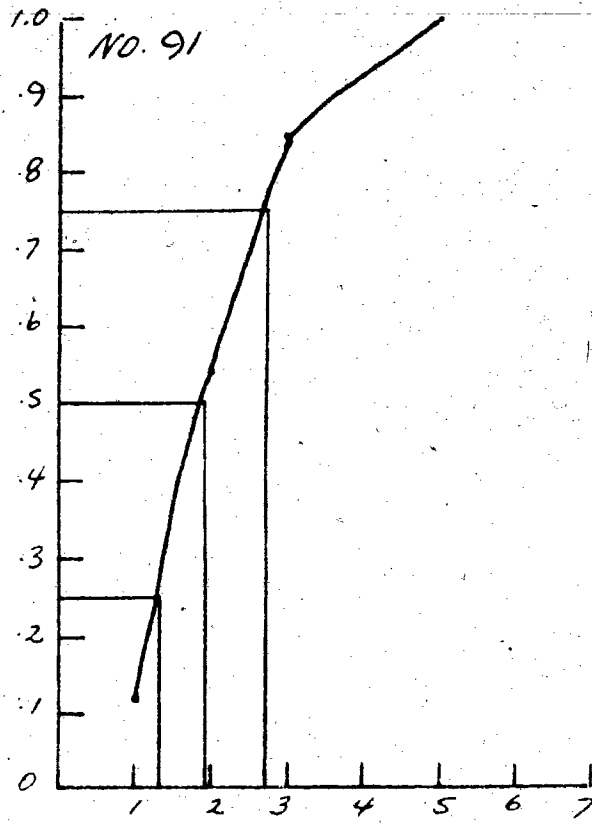
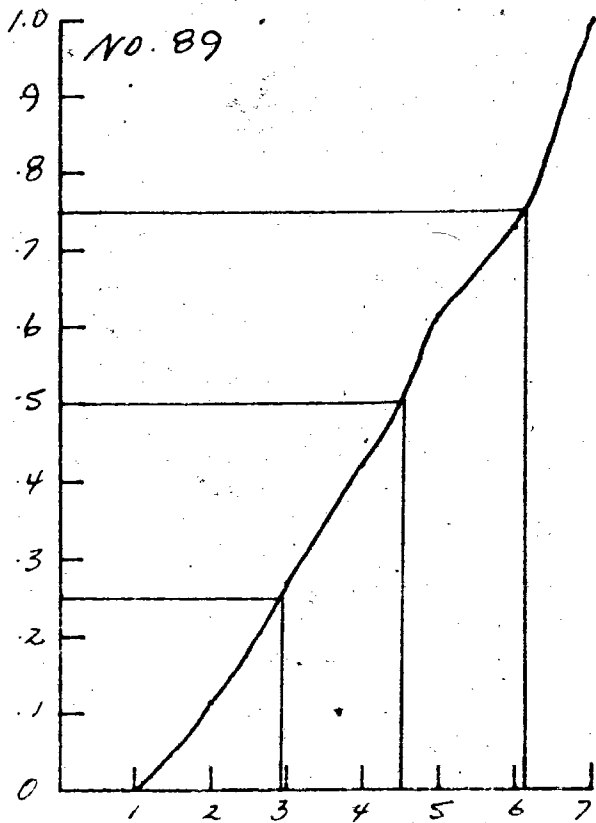


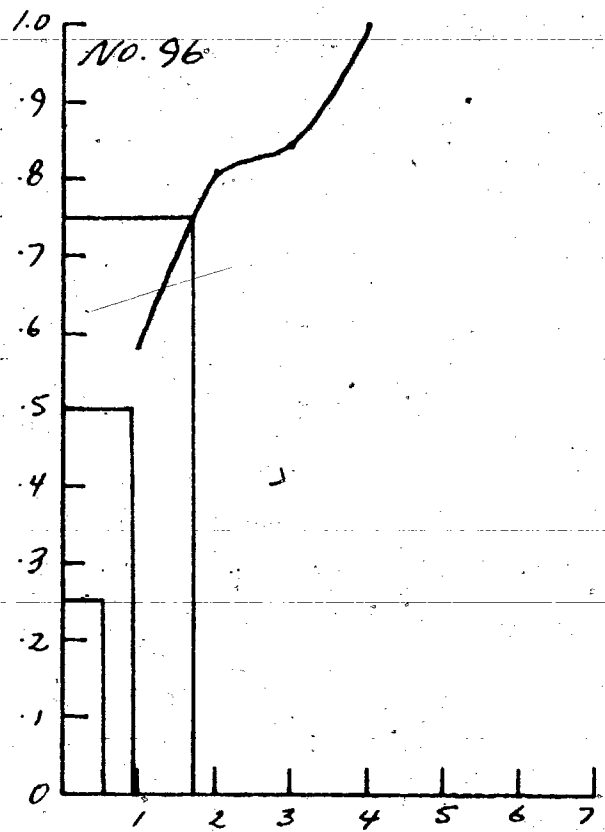
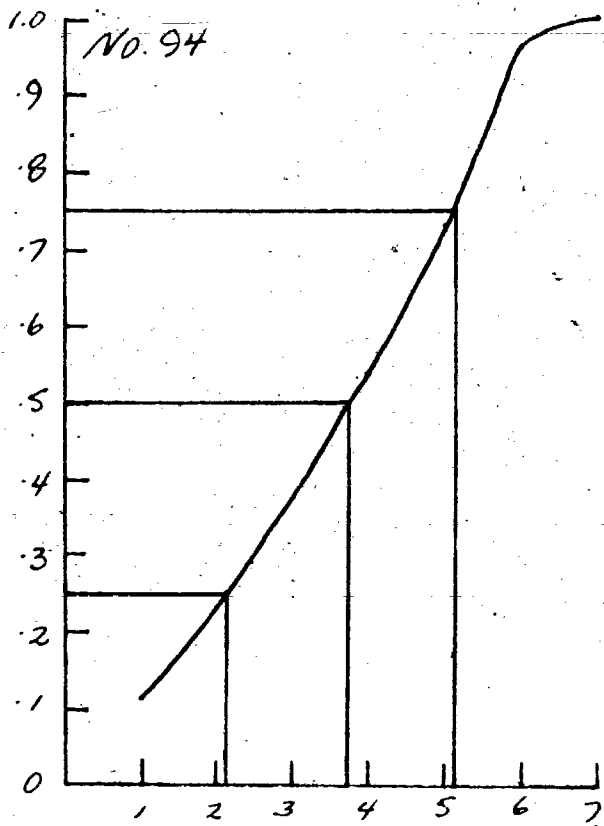
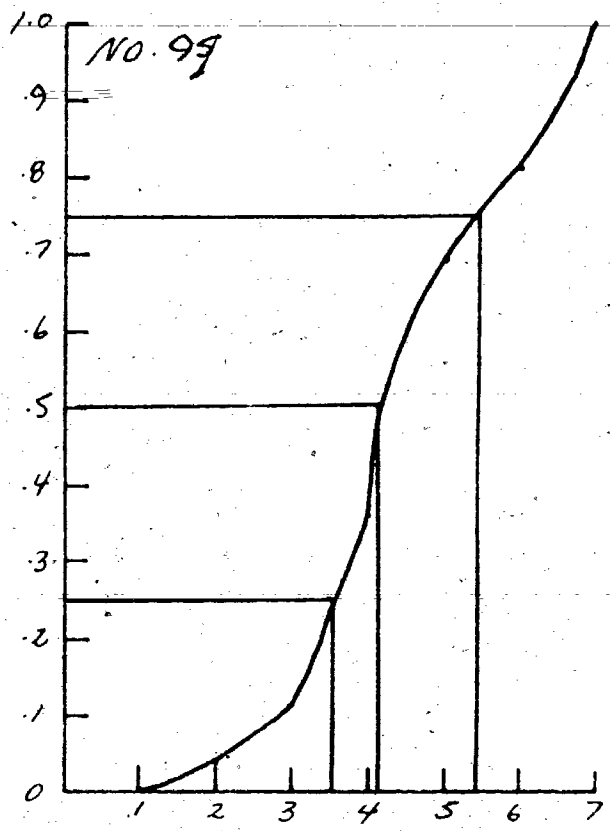
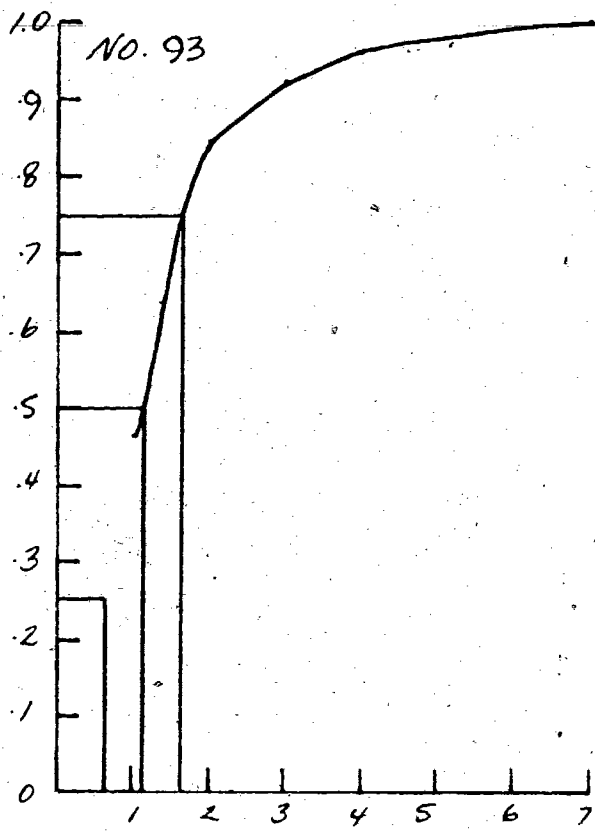


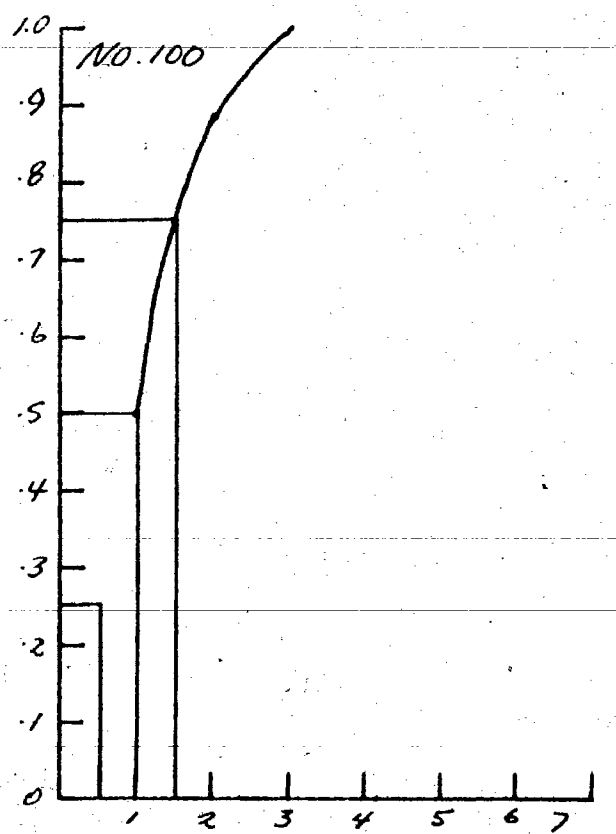
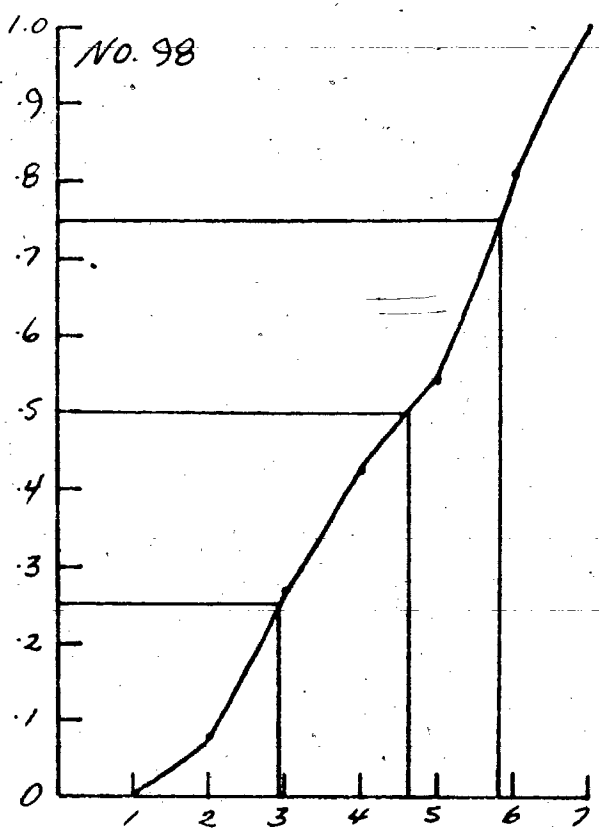
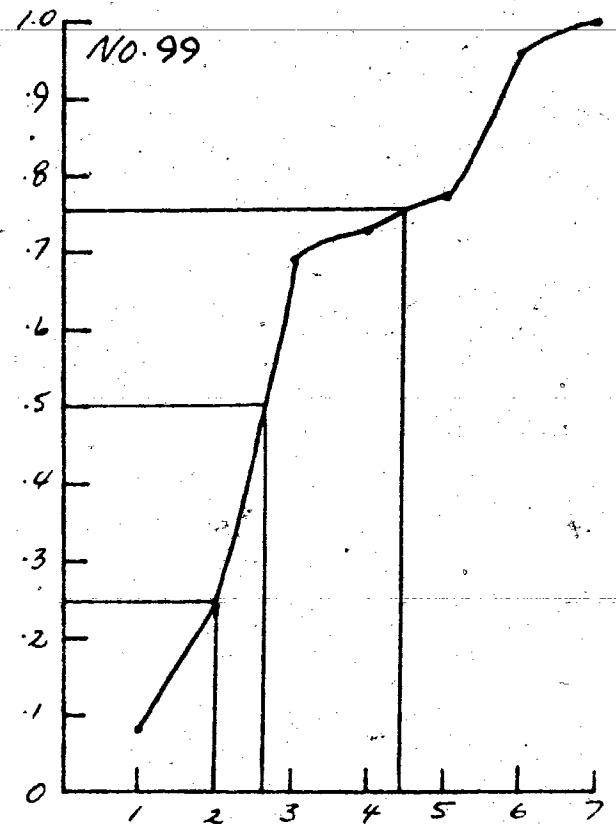
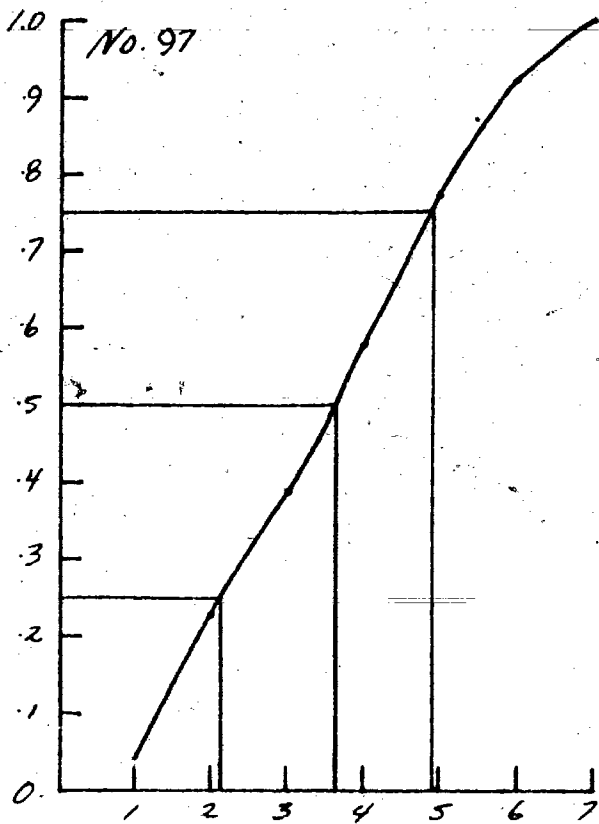


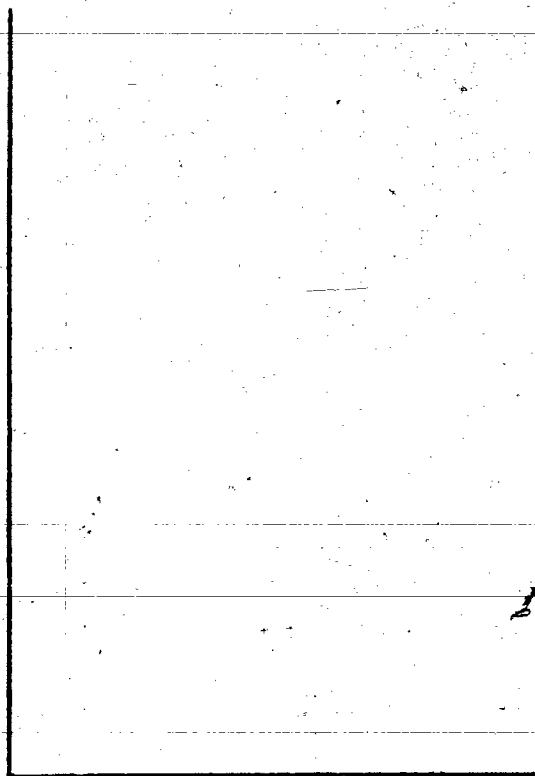
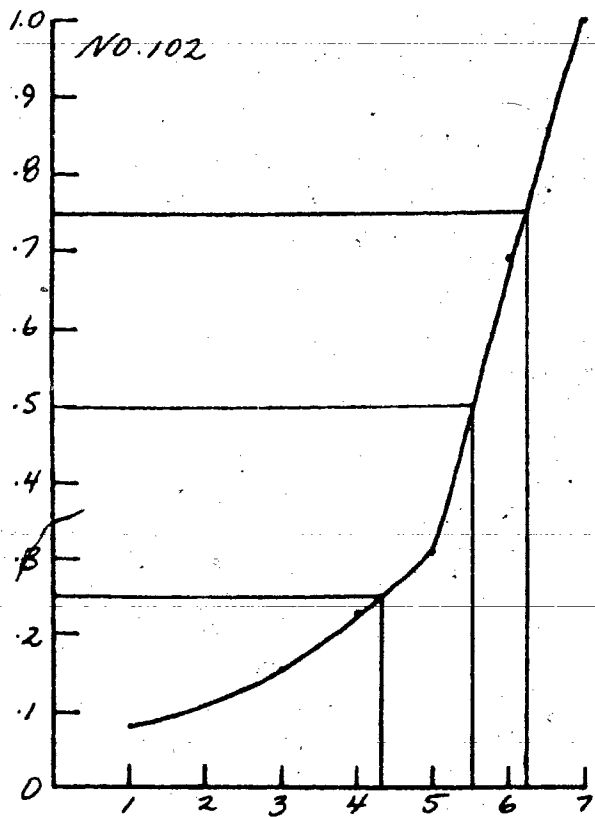
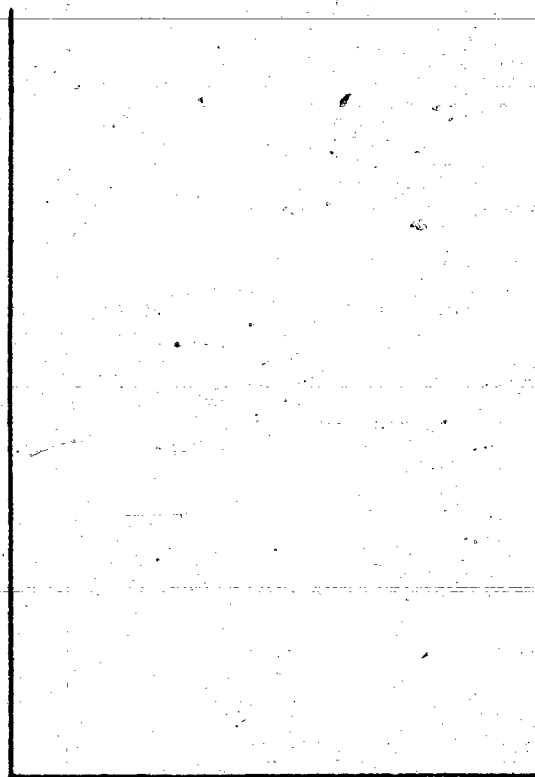
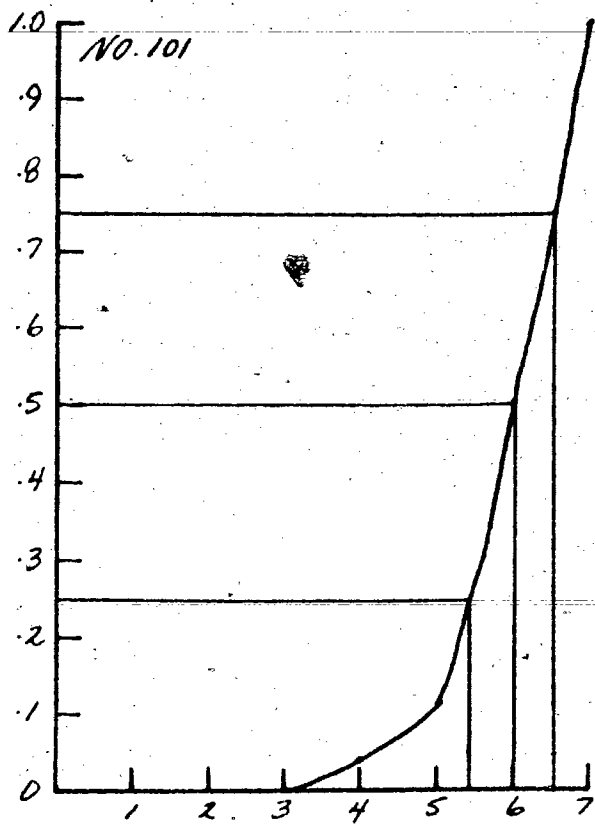






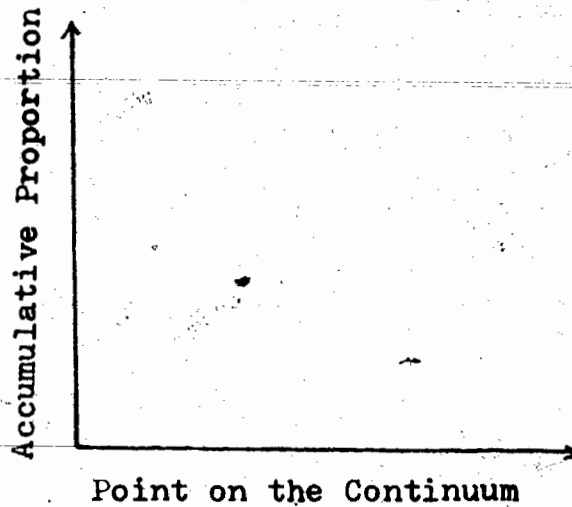




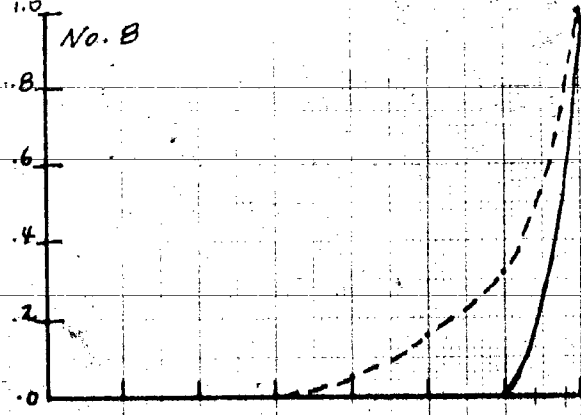
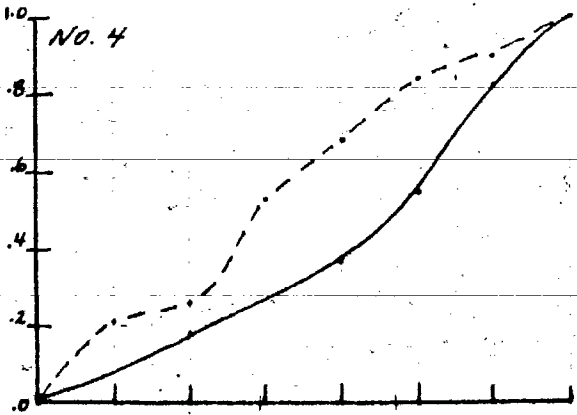
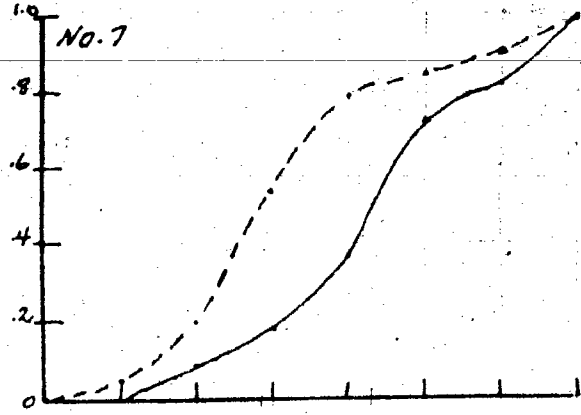
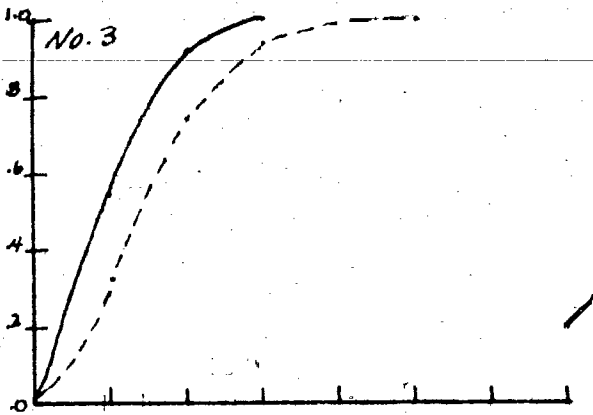
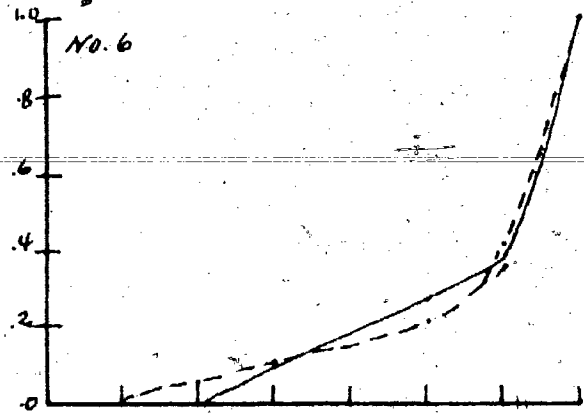
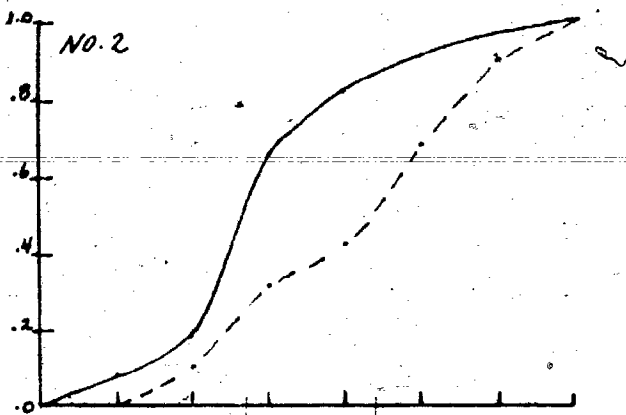
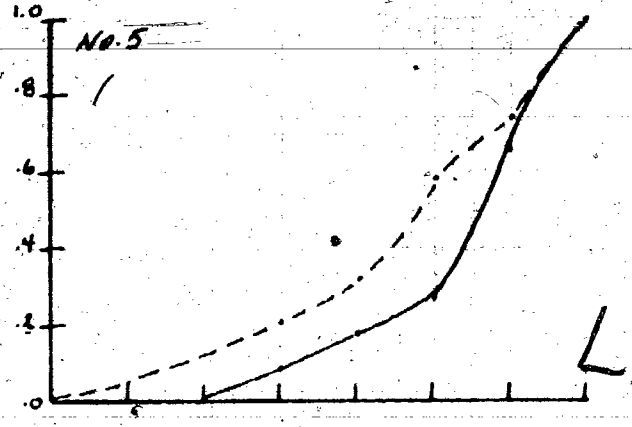
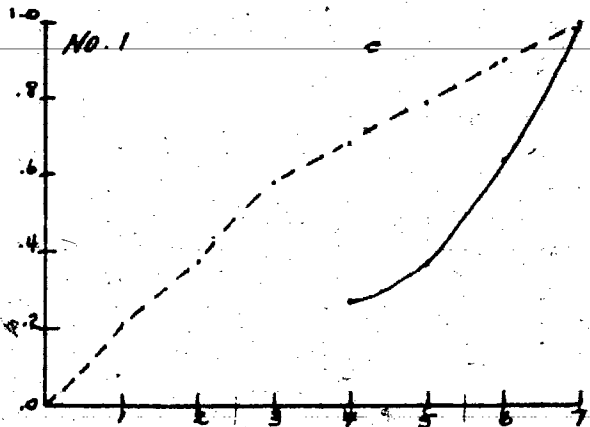


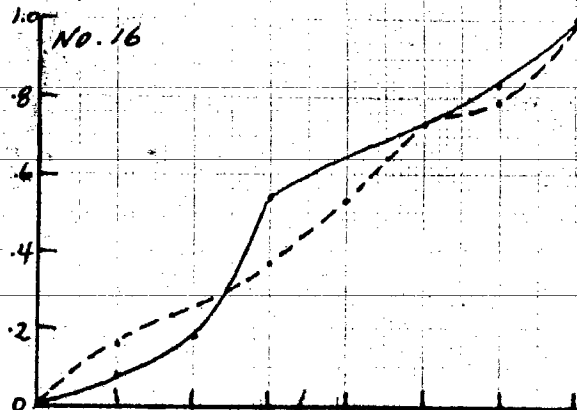
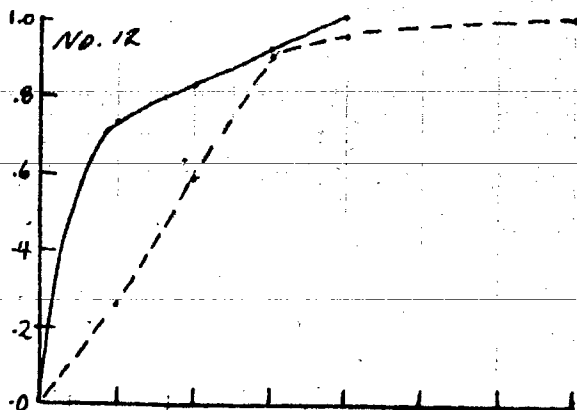
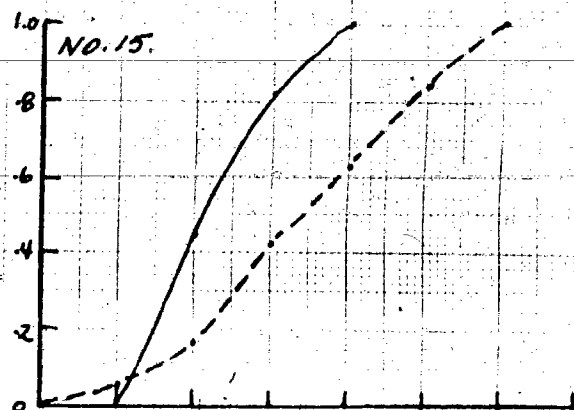
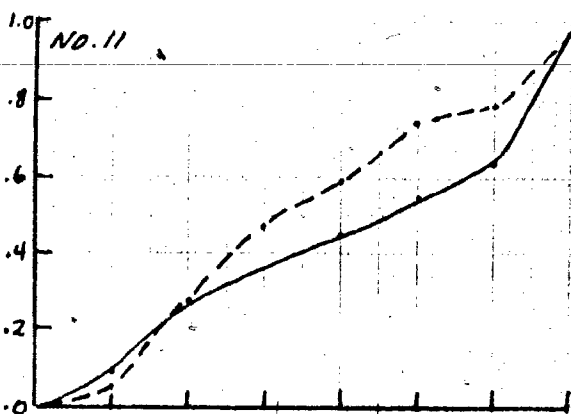
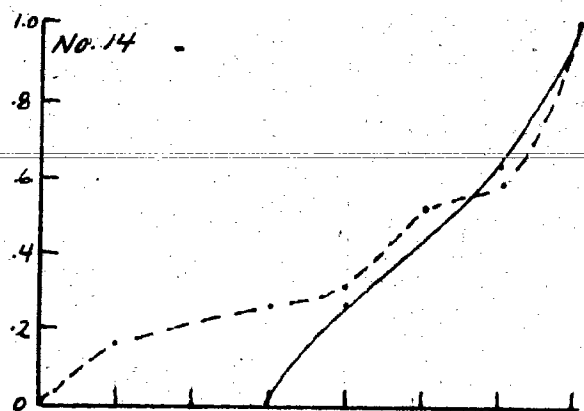
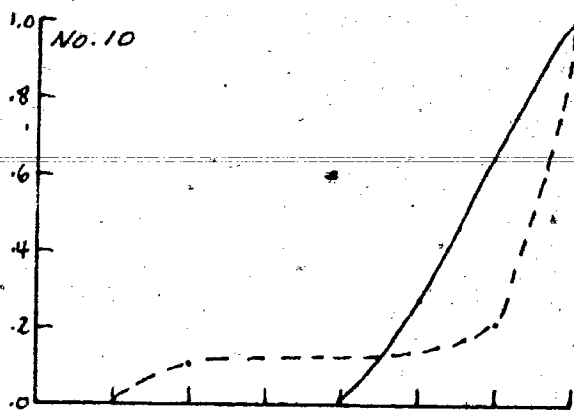
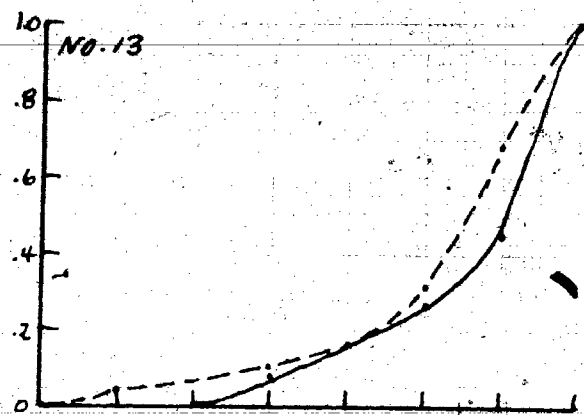
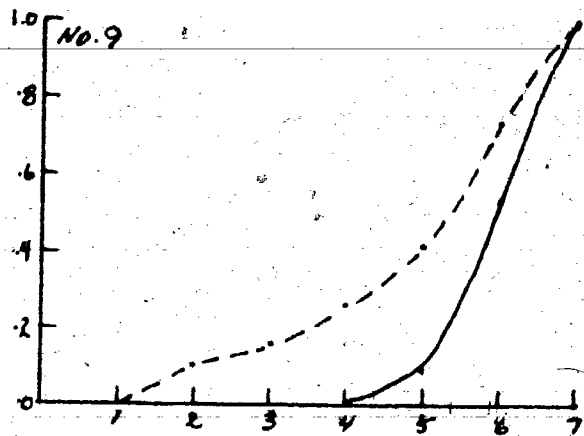
APPENDIX L

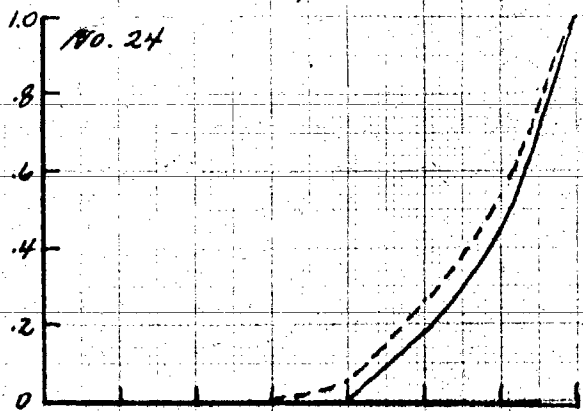
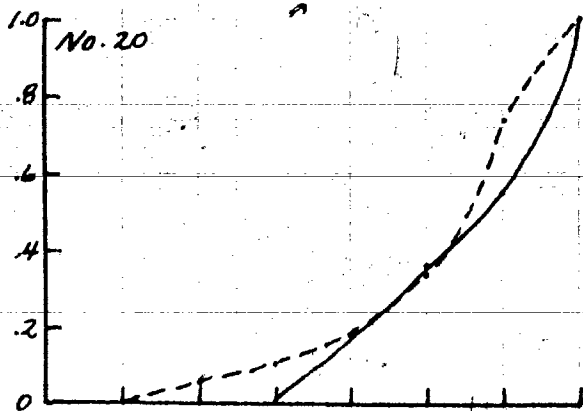
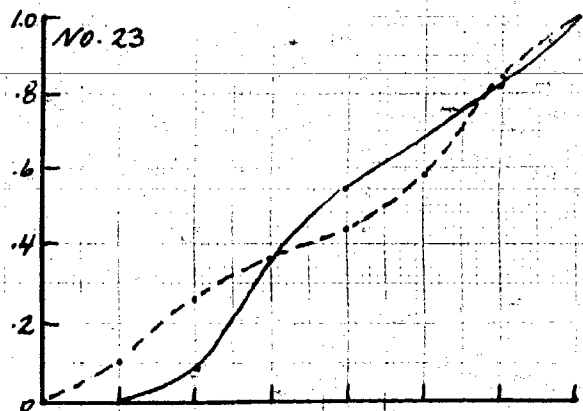
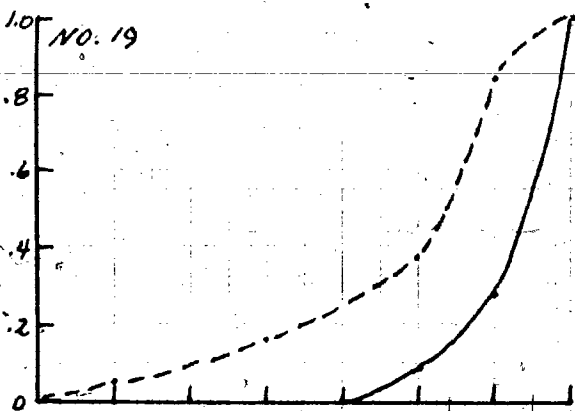
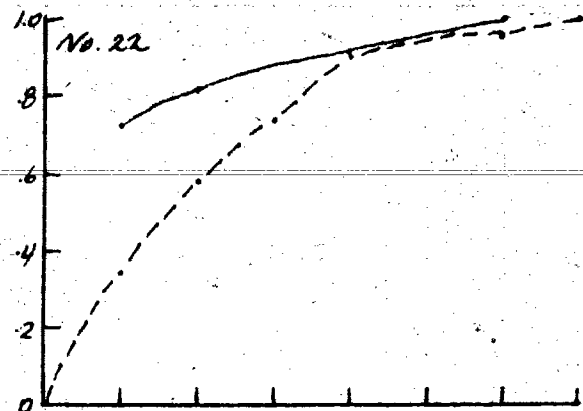
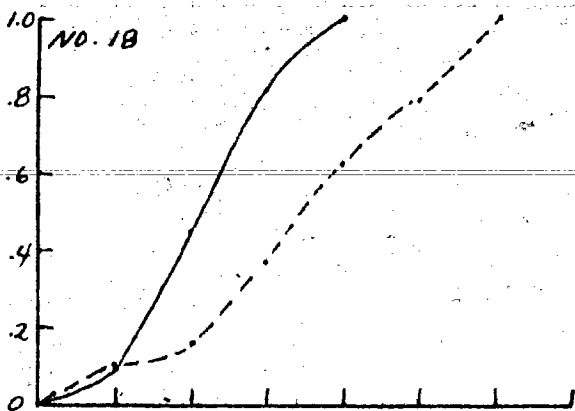
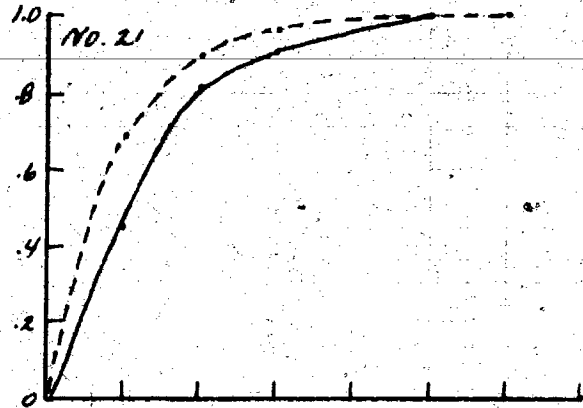
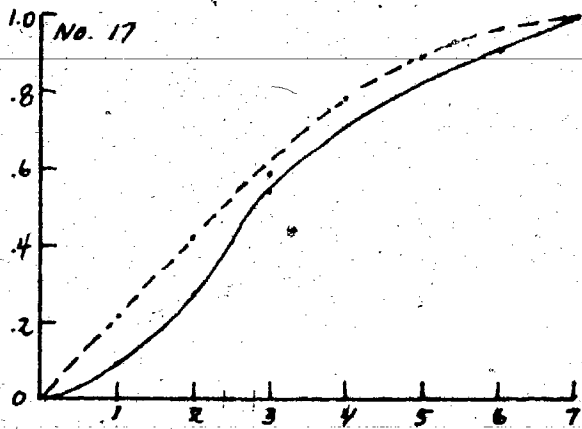
Phase III Graphs of Accumulative Proportions:
A Comparison of Open Education and Early Childhood Groups -
The Unadjusted Sample

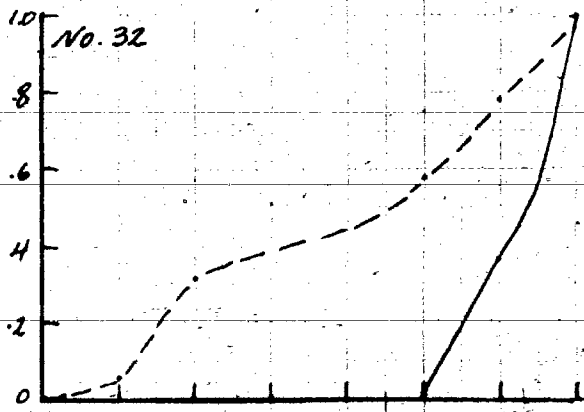
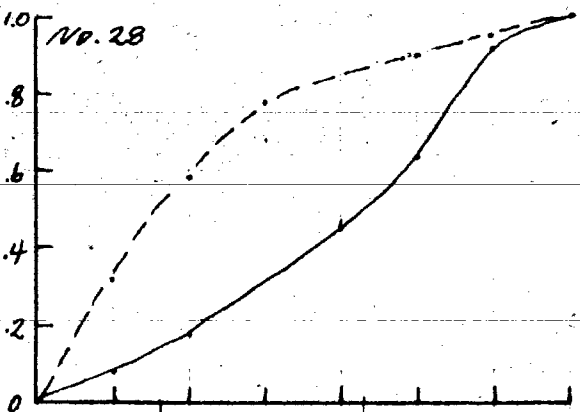
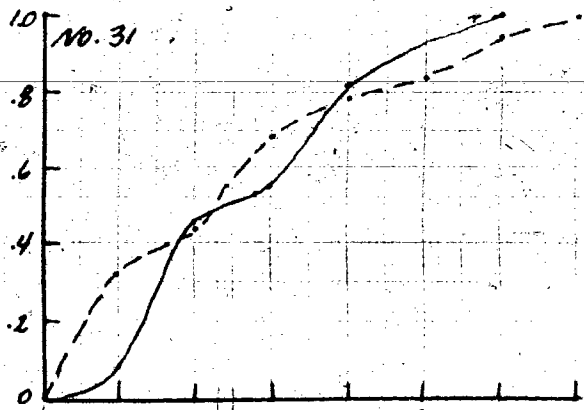
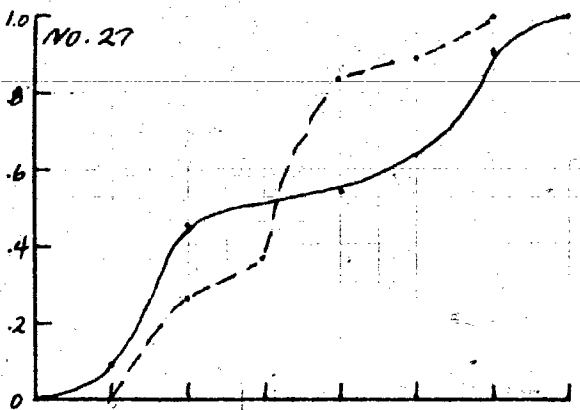
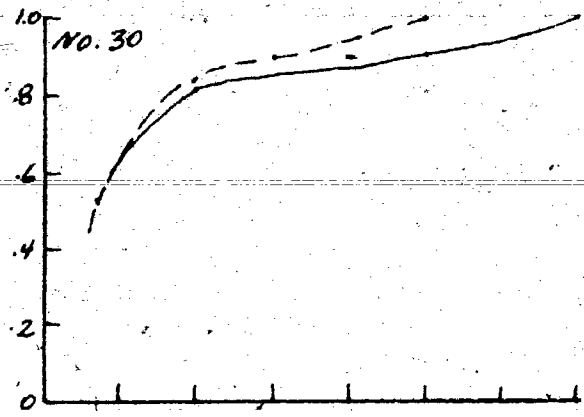
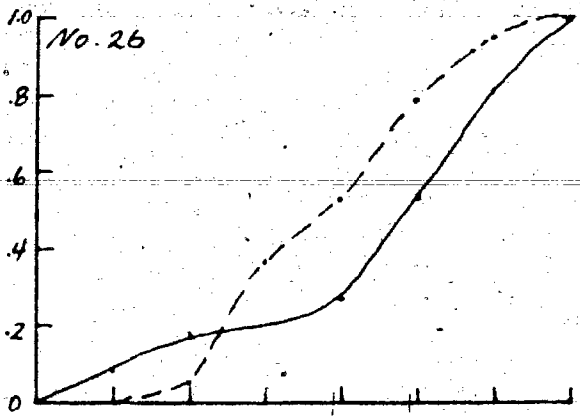
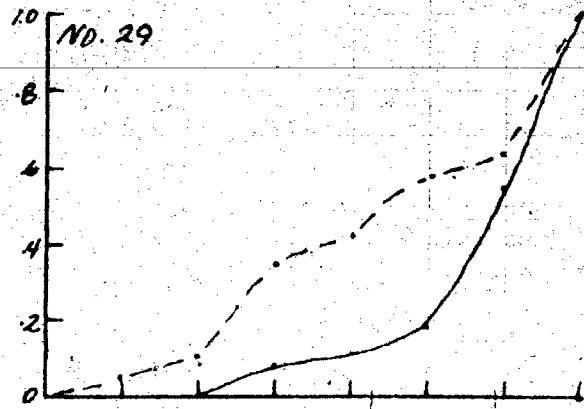
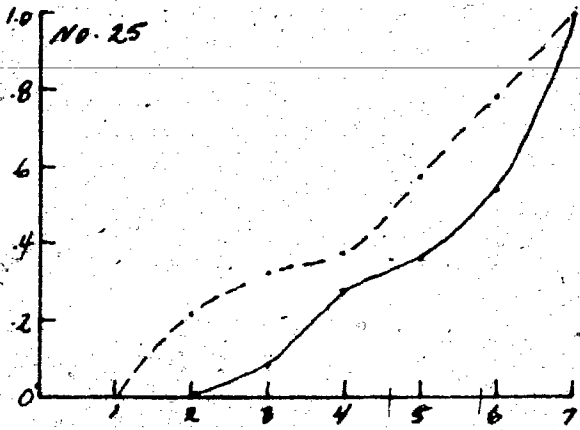


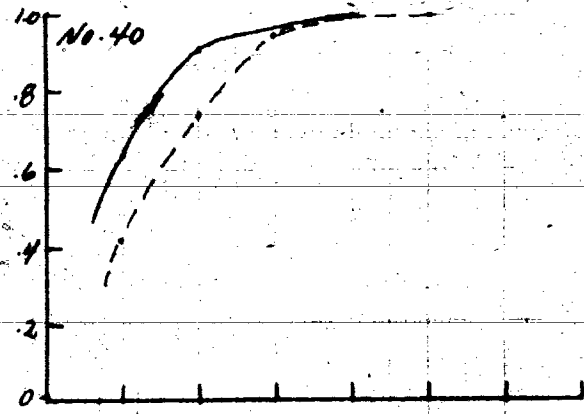
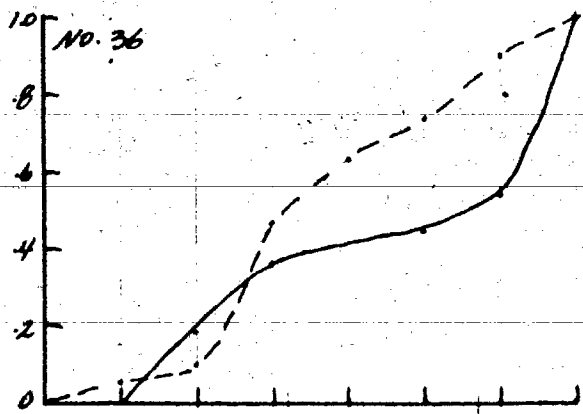
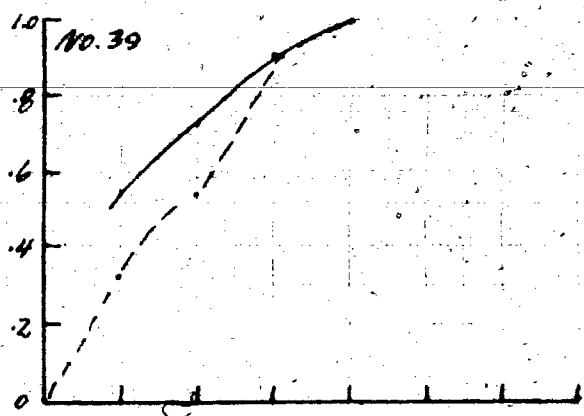
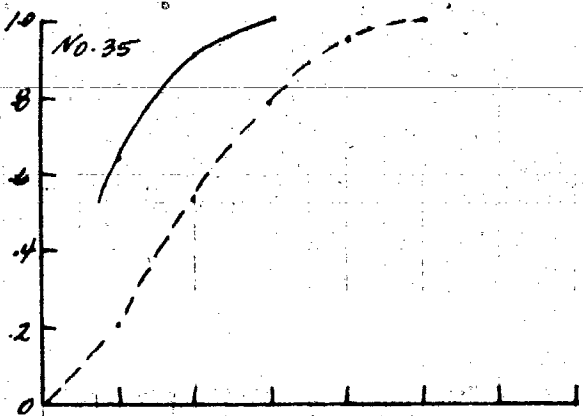
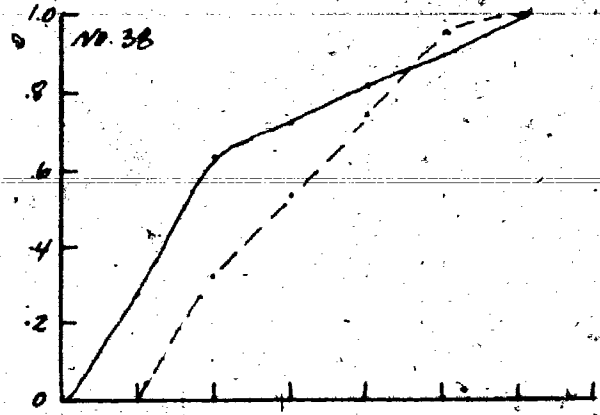
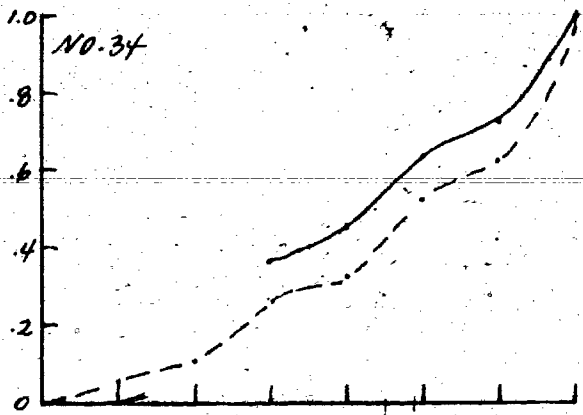
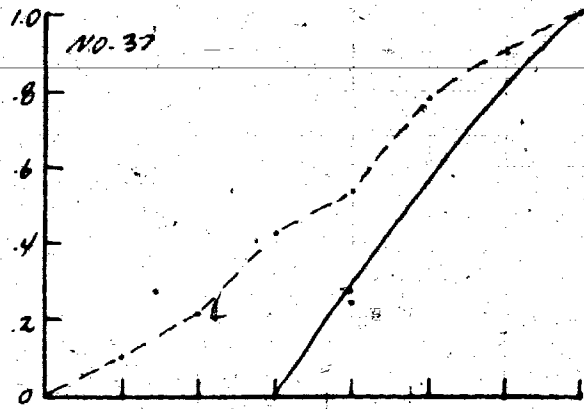
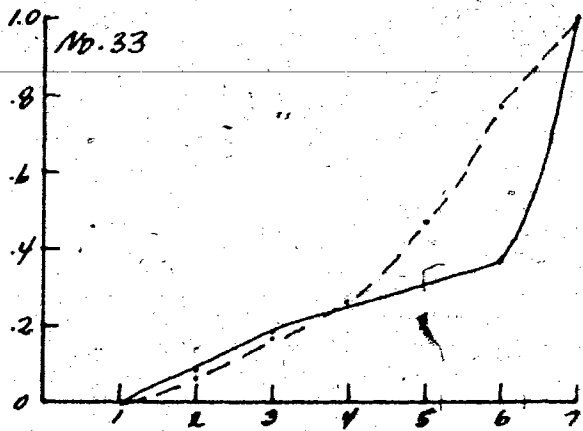
These graphs were used to determine scale values. Cumulative frequencies are graphed for statements 1 - 102 for each of the two module groups Open Education and Early Childhood. The Open Education is indicated by a solid line; the Early Childhood group by a broken line.

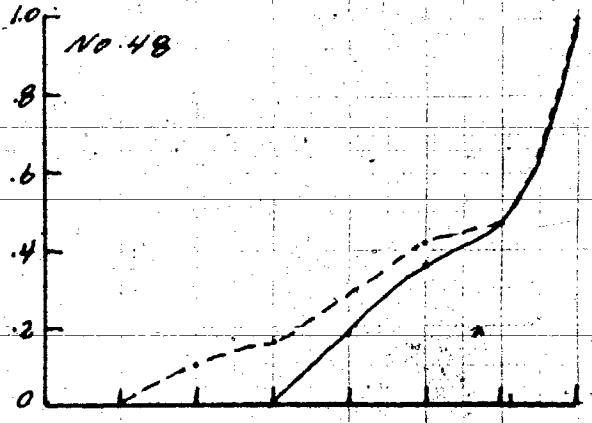
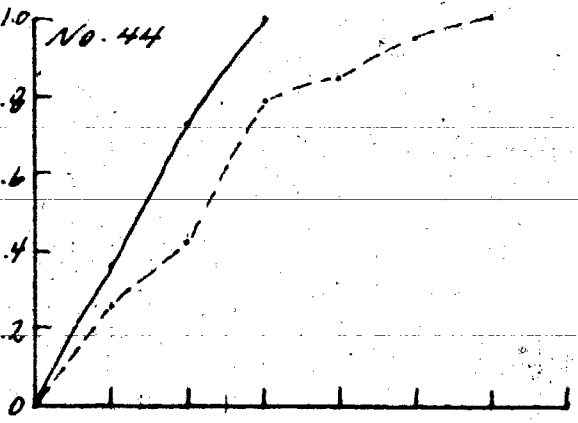
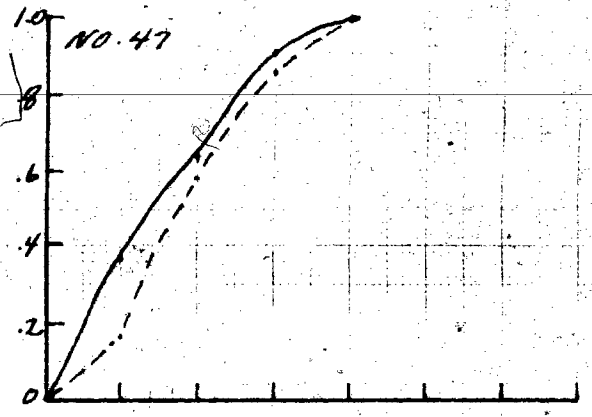
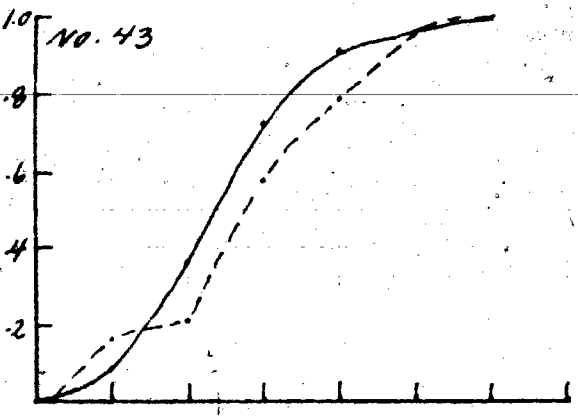
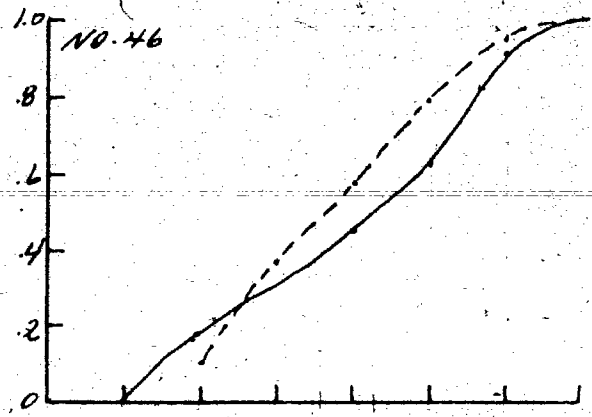
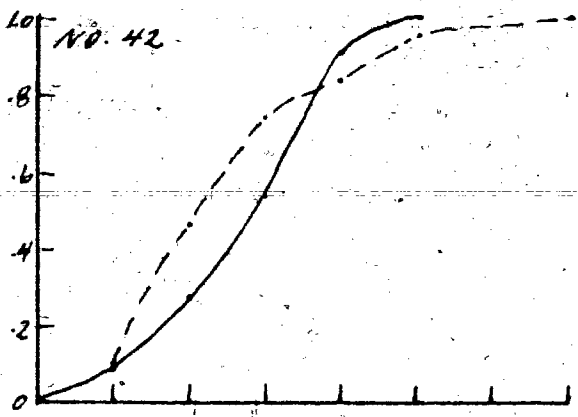
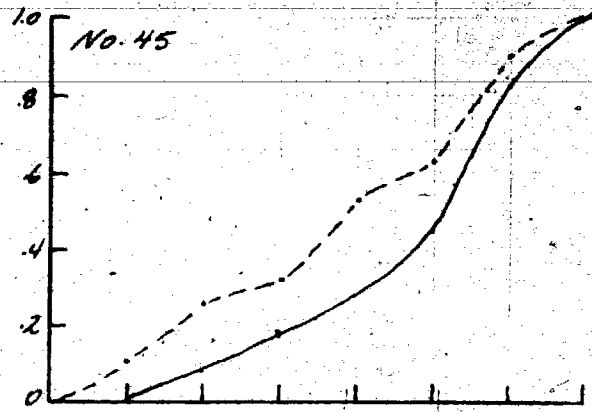
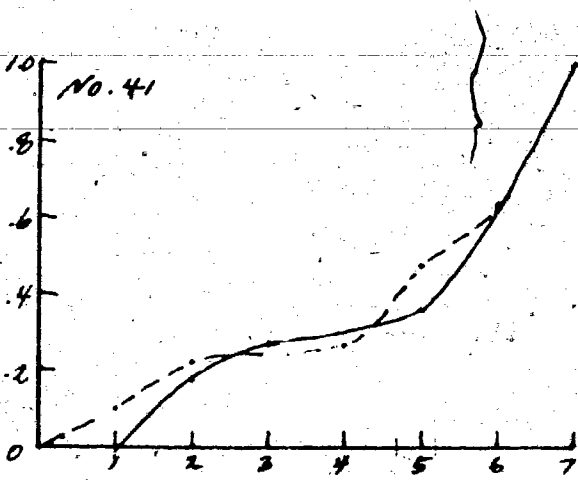


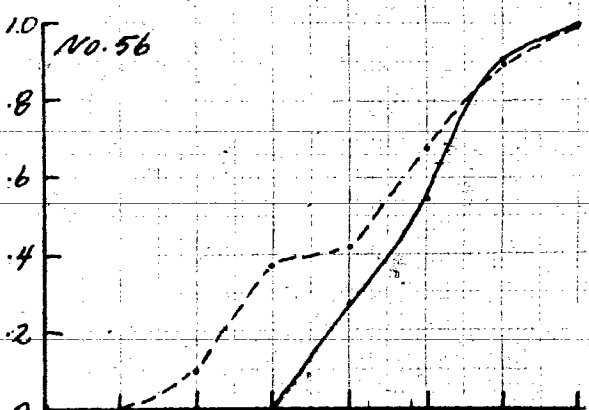
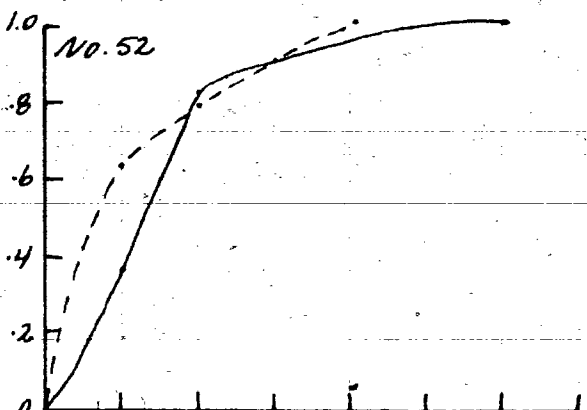
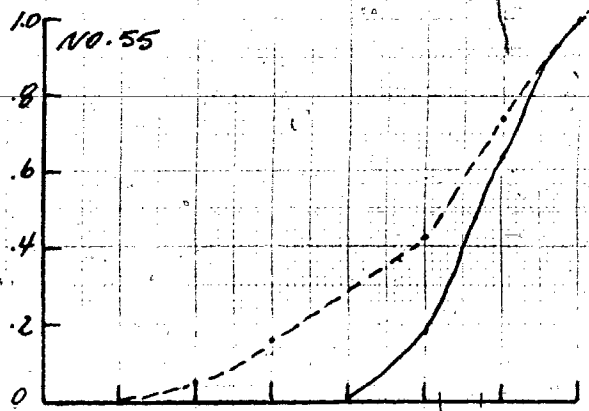
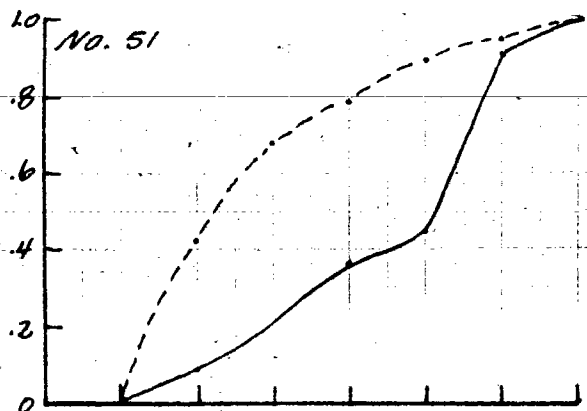
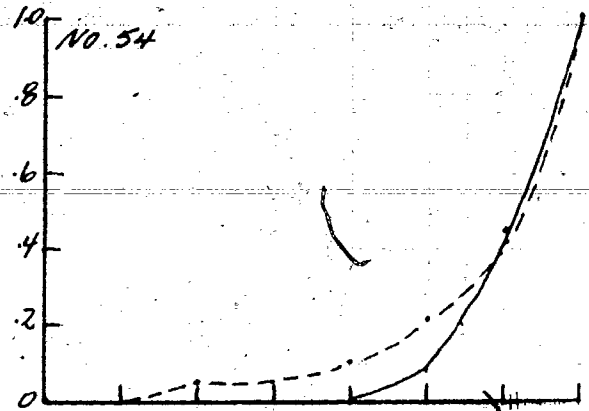
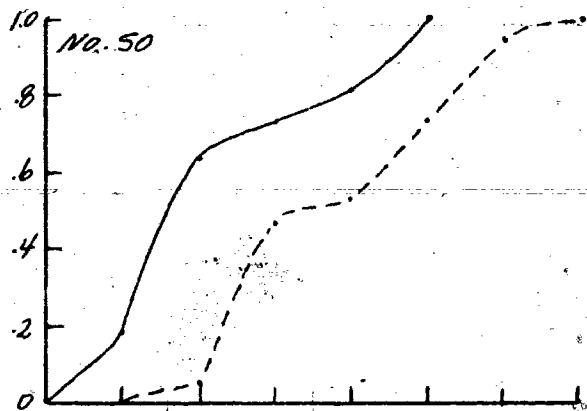
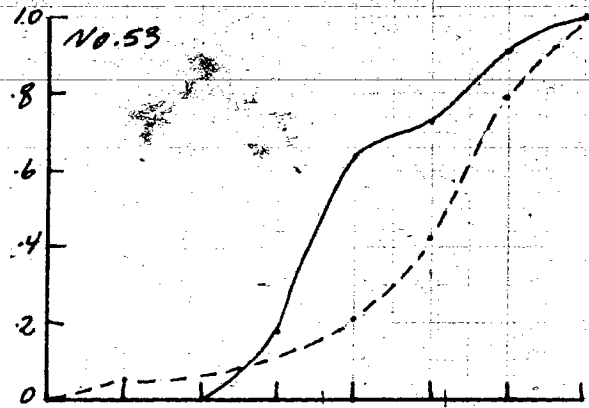
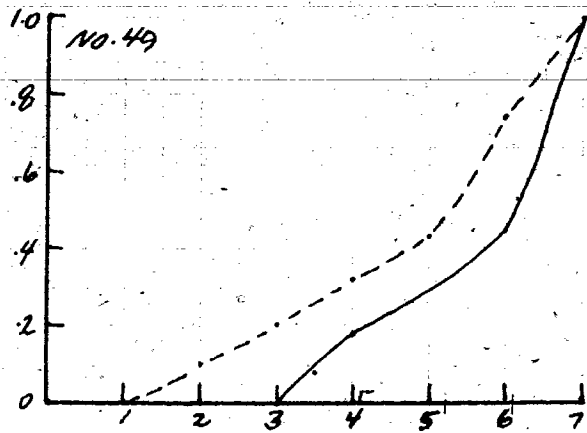


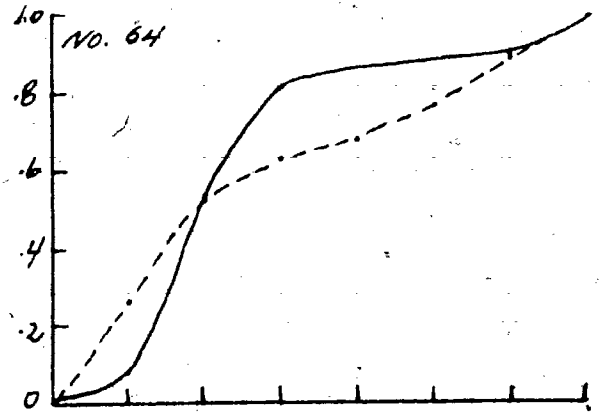
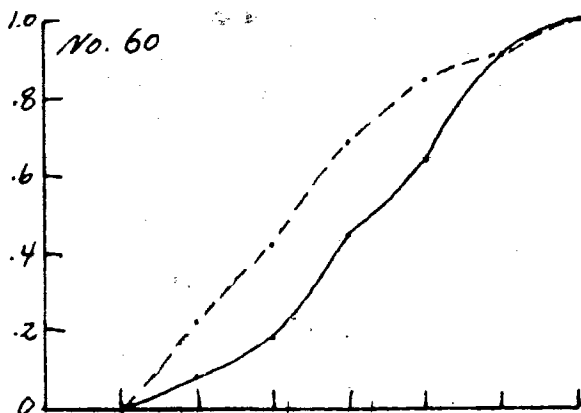
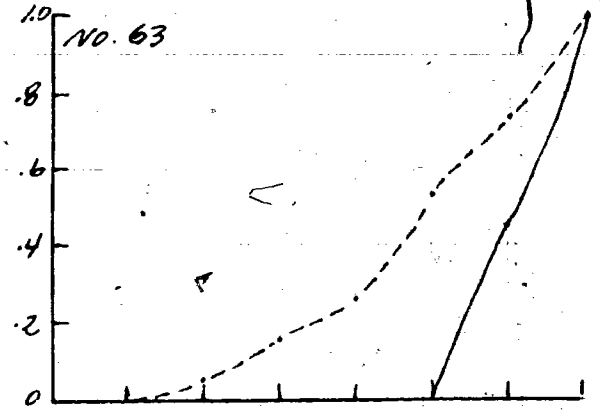
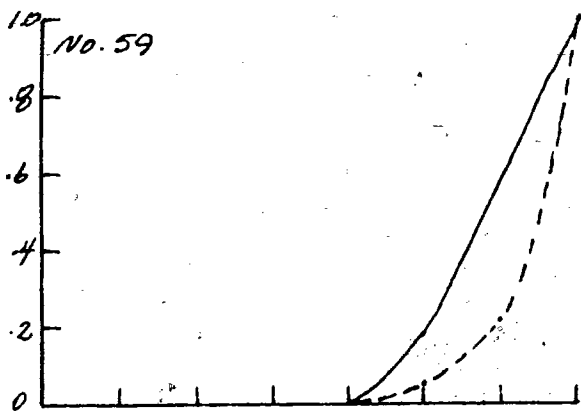
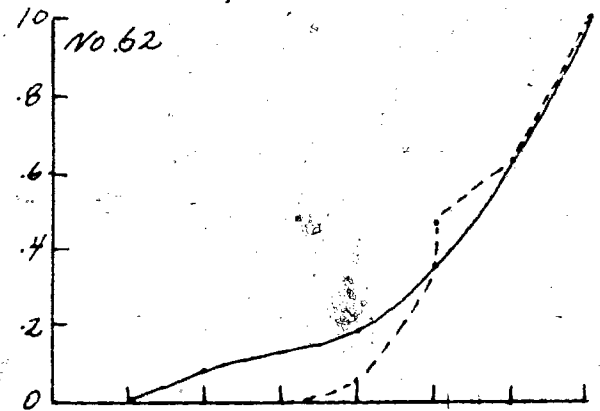
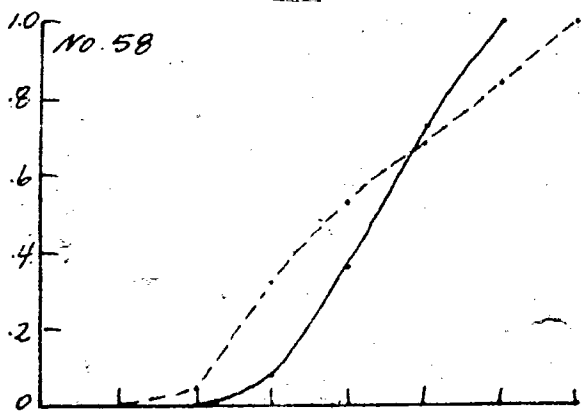
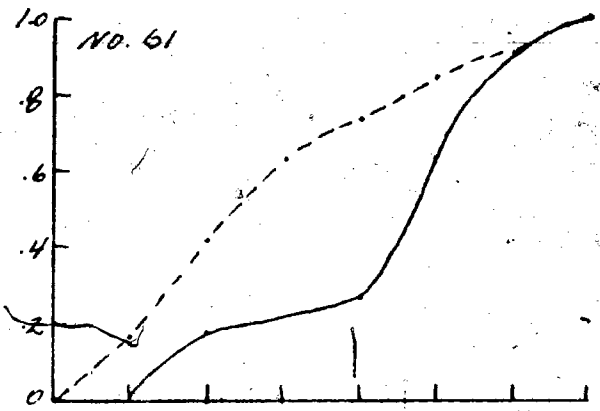
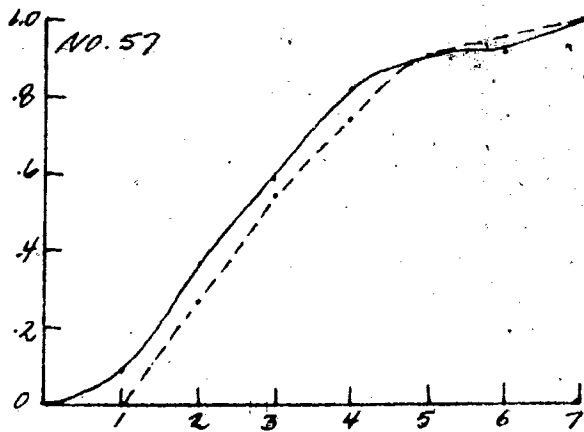


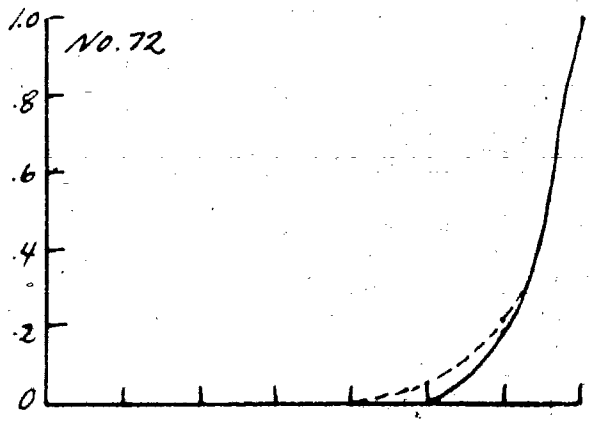
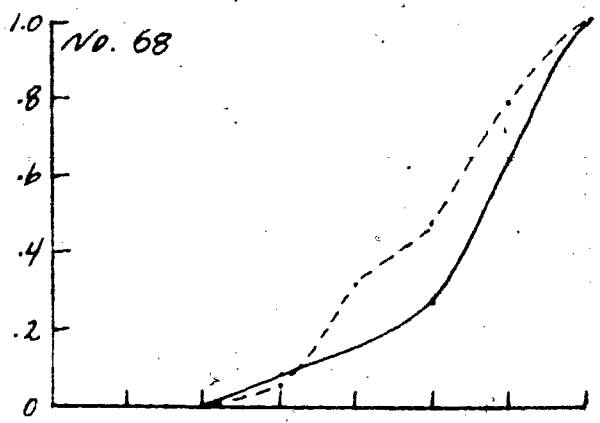
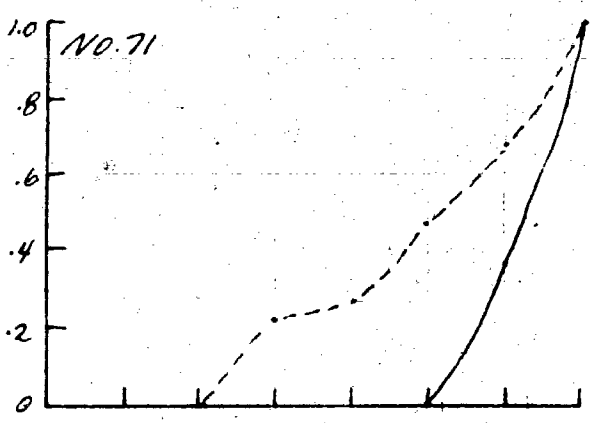
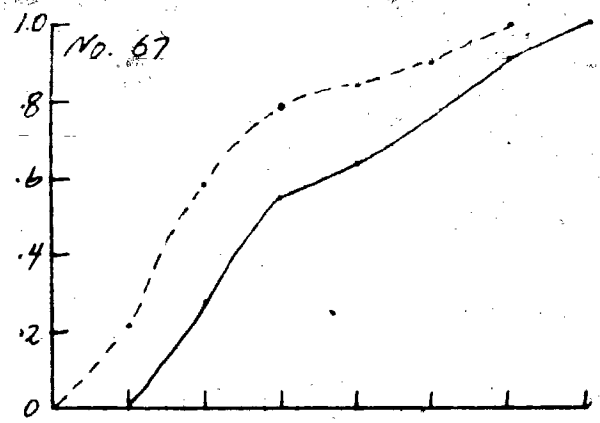
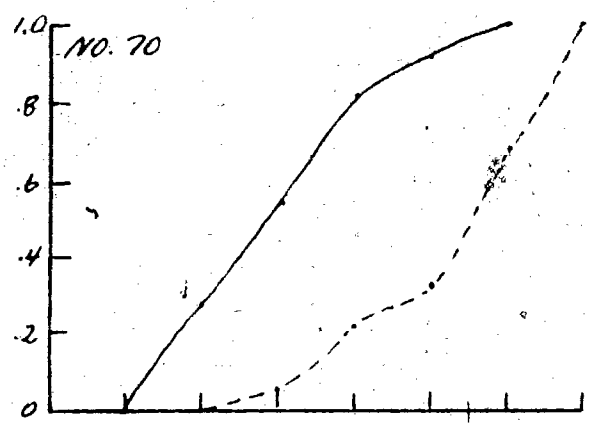
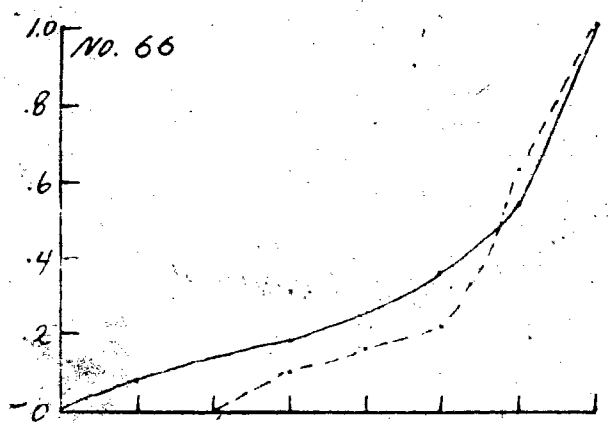
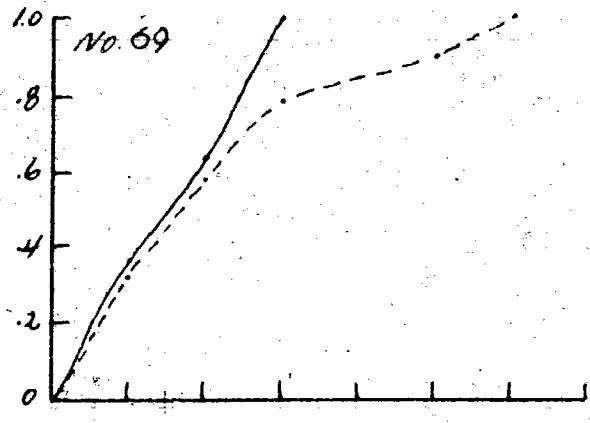
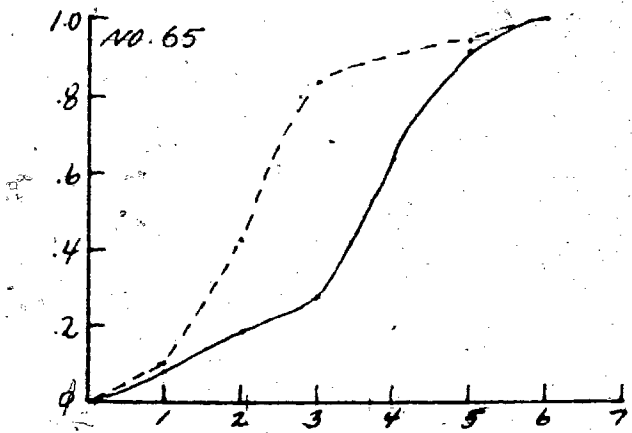


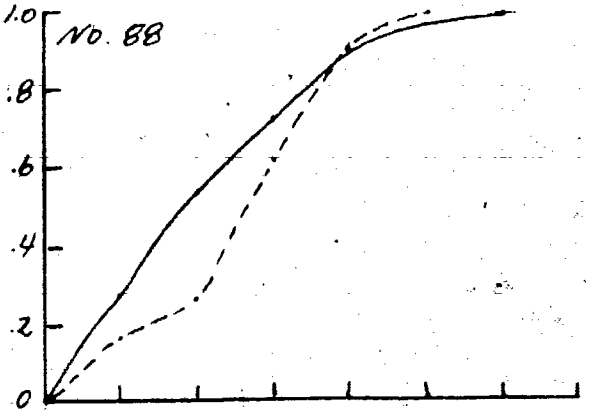
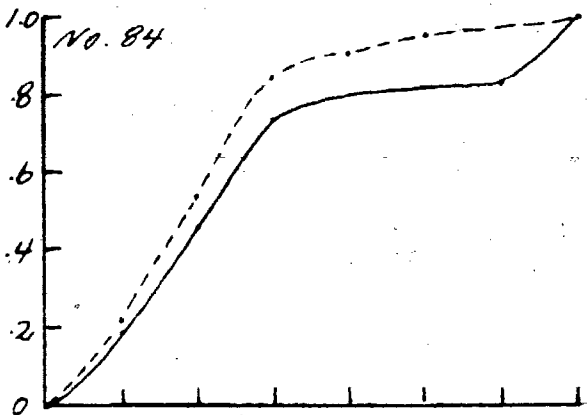
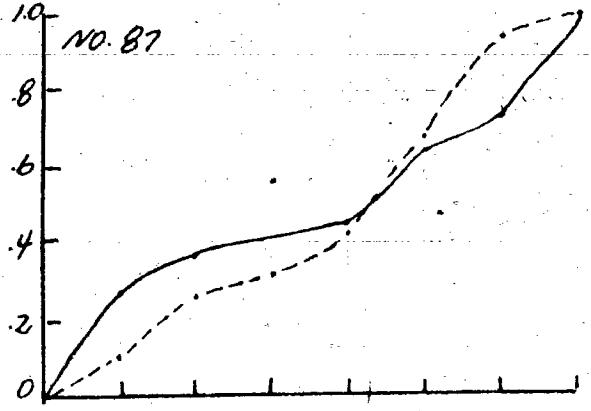
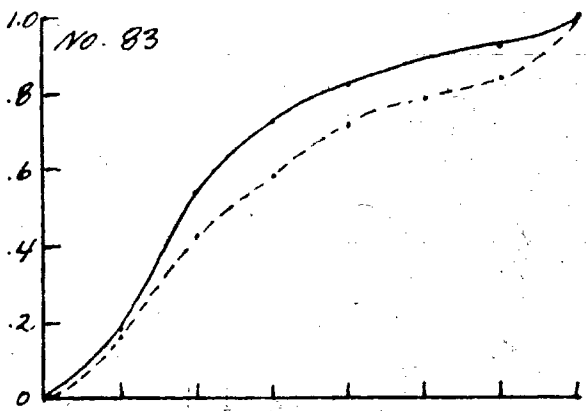
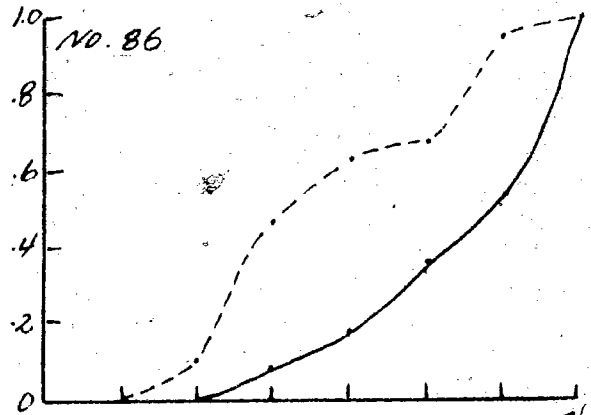
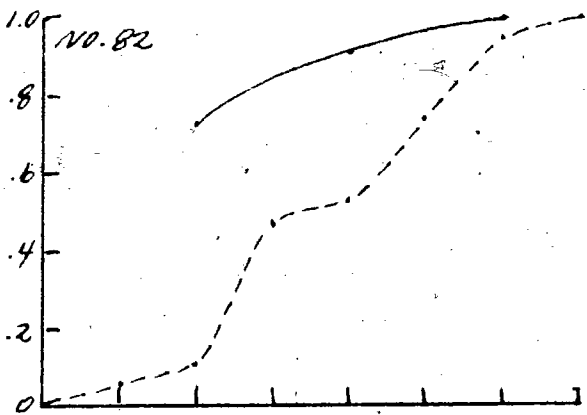
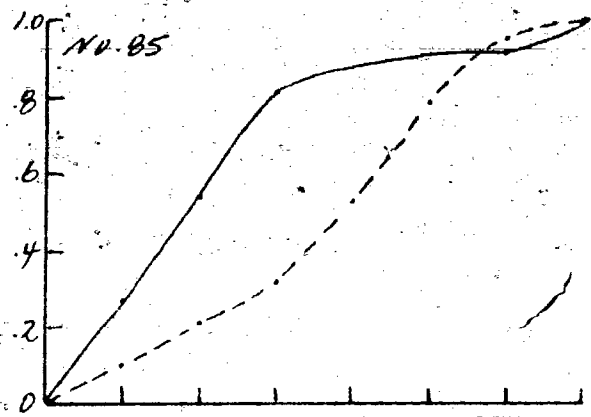
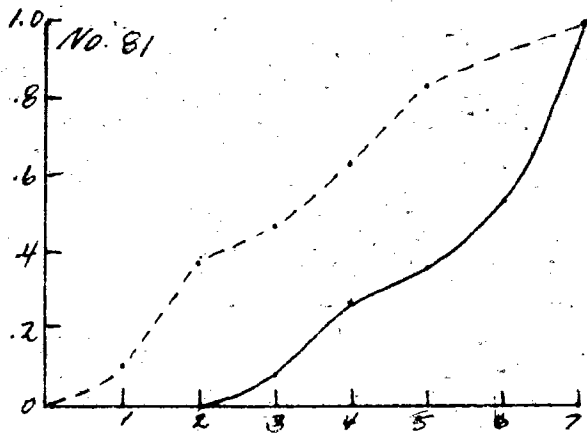


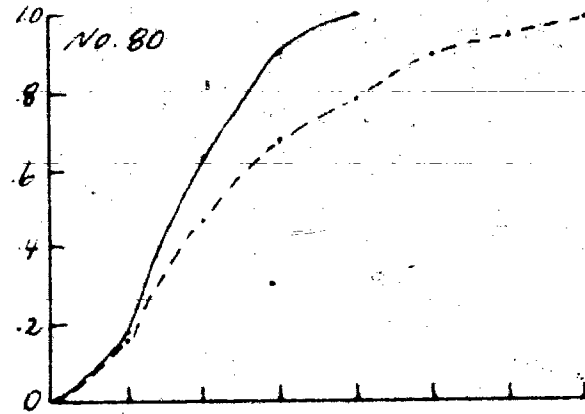
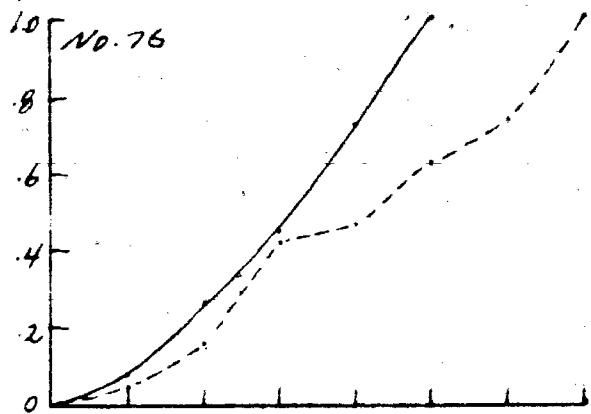
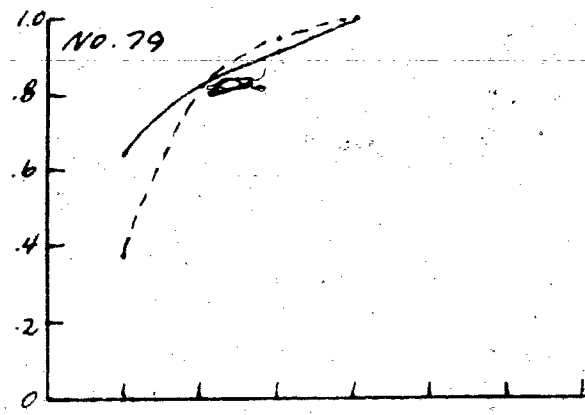
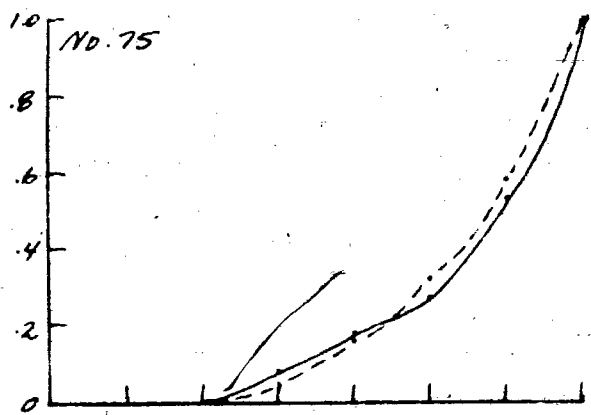
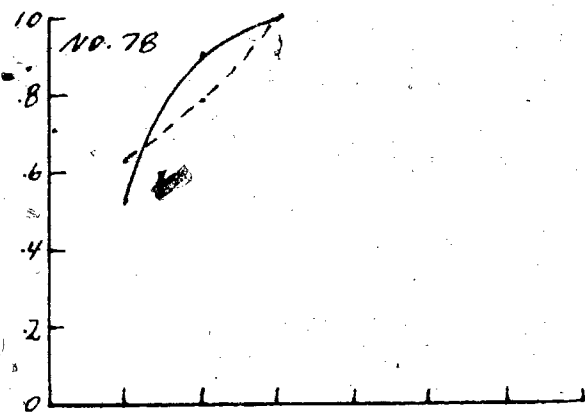
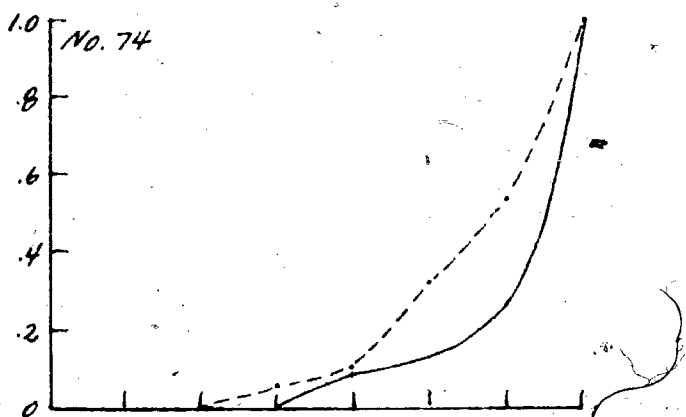
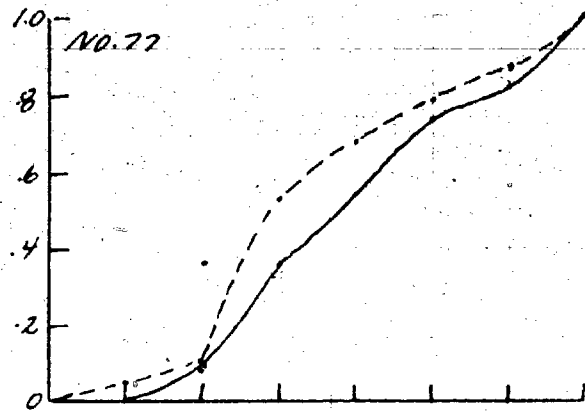
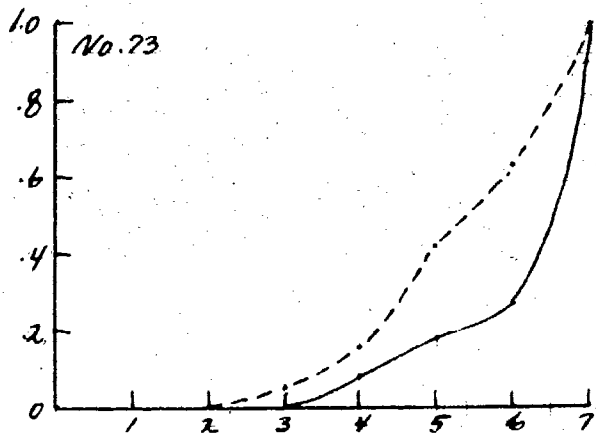


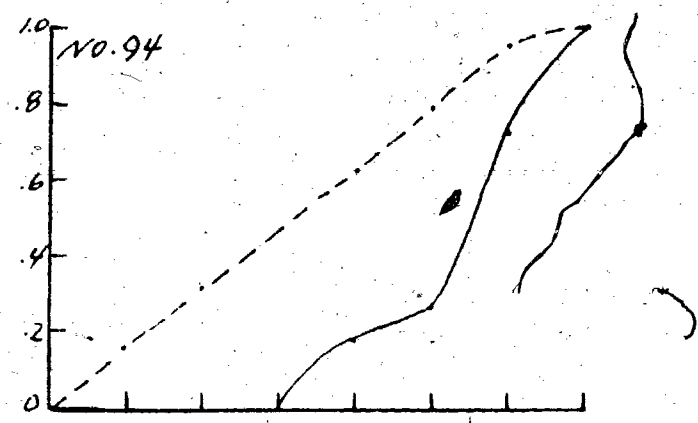
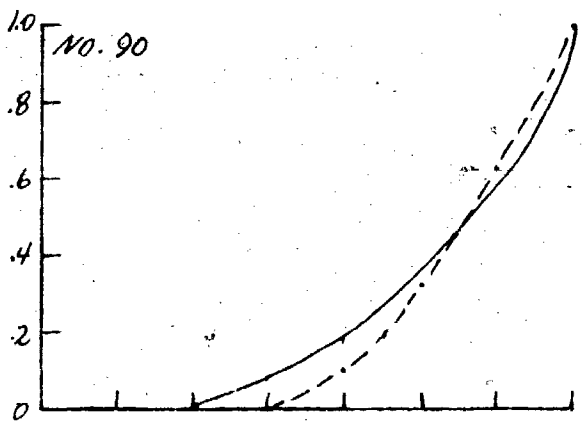
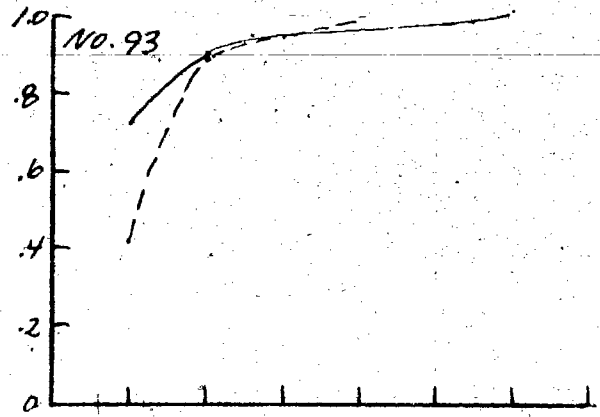
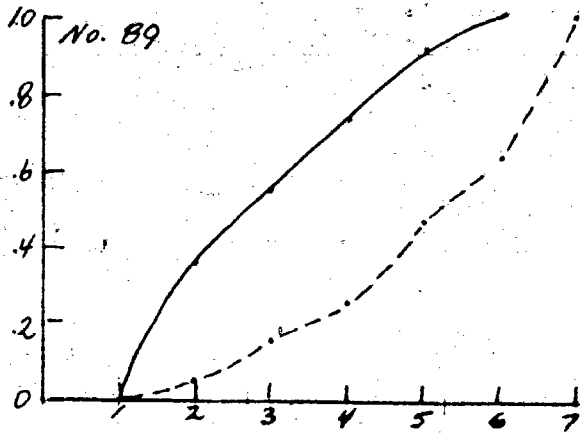












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